

Discrestic Engineering Publication

IBM POUGHKEEPSIE December 31, 1964

1410/7010

Subject:

Diagnostic Program T020C - Tape Operations Test

Sequence Number 201 Replaces T020B

T020 requires information about system and channel configuration in order to operate property. The minimum information required, for use at installation time is described on Summary page 003, the last page of T020 documentation.

When running from cards be sure that the Standard System Control Card (T 020 001) is punched in accordance with instructions in the "1410/7010 Introduction", Vol. 1.00.

Reason for Change:

A problem existed in the routine to "Test for Erase Forward During Backspace After Write Status" under certain conditions.

- 1. When the length of tape erased was equal to the length of the record used in the test routine.
- 2. One pass of the test had been run and the first 1000 records on tape, written by the last routine run, all had labels of the form xxxx 00586*.

The following changes were made to T020B to create T020C: (All pages to which changes were made are dated 12/31/64)

- 1. The length of the second record written in the subject routine was changed from 586 characters to End of memory 9400.
- 2. The tape record label used in all 586 character records (and End of Memory records) was redefined FROM: xxxx 00586 * TO: xxxx 00586 *.

Enclosures: 76 Pages

Card Deck for CARD ONLY SYSTEMS (as punched by UP51)

8 Cards - Card Loader (1-7) and 1 Core Clear

183 Cards No. 001 - 183 Data Cards

1 Card

Execute Card

Distribution: X 1410 Tape

X 7010 Tape

Other

T020

T020C

TAPE OPERATIONS TEST

(1410/7010)

December 31, 1964

T020 Page 002

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4.00.00.0 TEST DESCRIPTION

.00.1 MODIFICATIONS

See Release Sheet description of changes from last level.

.00.2 DESCRIPTION

T020 tests magnetic tape operation instructions on a 1410 of 7010 Data Processing System. It is a test of electrical rather than mechanical operation.

The test covers three main areas:

- a. CPU channel circuitry, control and data lines to TAU.
- b. Tape Adapter Unit, control and data lines to drives.
- c. Tape Drive Write and Read circuitry.

These areas are by no means independent and are not completely testable separately. The test assumes that the CPU is functioning correctly and can at least decode a tape operation instruction.

Tape Units are tested sequentially, one channel at a time, on all channels. No simultaneous channel operation is performed. Overlap mode is used when the Overlap Feature is present. All tape instructions are then issued in overlap mode.

T020 can serve as a reliability test. Most instructions are used frequently enough to keep them under close surveillance.

The test is organized in building block fashion. Each block or section tests an additional area of tape operation. Each section is composed of one or more routines where each routine tests particular steps in the execution of the tape instruction. Although each routine depends on previously established operations, any routine can be run independently.

After each test routine, a monitor routine, labeled "MONITR", is entered to provide program control and report error conditions. (Refer to flow chart Page 013.)

4.00.00.0 TEST DESCRIPTION

.00.2 DESCRIPTION Continued

Almost all tape operations are performed through the use of utility Write, Read and Unit Control Routines. These utility routines generate the particular instruction requested, set up the data field, execute the instruction, test the channel status indicators and test for overlapped and non overlapped operation.

For additional information on the utility Write, Read and Unit Control routines refer to OPERATING HINTS and COMMENTS section 4.00.03.3.

Automatic error correction routines are used if manual intervention does not prohibit their execution. The analysis of the results of each tape operation is made in the test routine initiating the instruction, and failure to meet expected results is recorded. (Refer to flow chart, page 015.)

T020 begins immediately on completion of loading. No manual intervention is required. The program types its identity and the identity of each tape unit it is testing as they are selected. Success or failure indications are typed following the tape unit's identity. At completion of the test, an end of job message is typed, and T020 branches to the load program.

.00.3 EQUIPMENT REQUIRED

Any model 1410 or 7010

729s Mod II, IV, V, VI and/or 7330s.

Attached through

1414 Mods. 1, 2, or 7.

The Console Printer is the only output device employed.

.00.4 CARD DECK

T020 in card form consists of:

7 Cards Load Program
1 Card Core Clear
Program Deck Program T020
1 Card Execute card (TADS)
(Branch to 2000)

NOTE: Program card #001 is a STANDARD SYSTEM CONTROL CARD. It does not have any control information punched in columns 13 - 44.

.00.5 EC LEVEL OF MACHINE

1414 - 252643 (Permits backspacing into load point)

.00.6 PROGRAM RUN TIME

Approximately 3 minutes per tape drive for 729s.

4.00.01.0 LOADING PROCEDURES

Standard 1410 Diagnostic Loading Procedure is used. Refer to "1410/7010 Introductory Material" for further information.

4.00.02.0 OPERATING PROCEDURE

.02.1 Rewind and set to READY status tape drives to be tested.

(All READY tape drives from number 1 to number 9 are tested.

Drive 0 is not tested on any channel.)

Set ASTERISK INSERT switch to ON.

T020 begins immediately on completion of loading. No manual intervention is required.

Tape drives are tested sequentially. Each drive is tested to conclusion before the next one is selected.

All drives to be tested need not be READY when the test is begun.

Additional tape units on a channel can be added in ascending sequence.

^{1.} See Release Sheet for exact number of cards in program deck.

.02.2 Program operation can be changed at any time using the "Program Alter Routine". TADs are loaded as blanks and TAD locations are only tested for 1.

The TADs used are:

Standard

TADs	ADDR	NOT 1	1
TAD0	01000	Do Not	Bypass Typeout
TAD1	01001	Do Not	Loop on Routine
TAD2	01002	Do Not	Halt on Error
TAD3	01003	Do Not	Repeat Program

Special

TAD4	01004	Do Not	Bypass Overlap Mode
TAD5	01005	Do Not	Halt after 1 I/O Operation
TAD6	01006	Do Not	Rewind Unload
TAD7	01007	Do Not	Perform LRCR Test
TAD8	01008	Do Not	Bypass Status Ind Typeout

T020 is run in overlap mode if the SYSTEM CONTROL CARD indicates the Overlap Feature is present. To change from overlap mode to unoverlap mode or from unoverlap to overlap mode, T020A must be restarted from 2000 after TAD4 is changed.

Setting TAD6 to 1 causes all the tape drives to rewind and unload (instead of just rewinding) after all the drives on a channel are tested.

To run the LRCR Test" routine, set TAD7 to 1. The routine is run the first time it is encountered after TAD7 is set. It is then bypassed until the next channel is tested. For additional information on running the "LRCR Test" routine, refer to OPERATING HINTS & COMMENTS, section 4.00.03.5.

Setting TAD8 to 1 bypass Status Indicator Error typeouts only.

^{1.} Longitudinal Redundancy Check Register (LRCR)

4.00.03.0 OPERATING HINTS AND COMMENTS

- .03.1 T020 tests all tape drives and channels that are READY (except drive 6). To bypass a tape drive or channel, RESET the drive to Not READY or turn the TAU to OFF LINE. The same method is used to terminate operations on a drive of channel while the test is in progress. Caution is advised as resetting the drive status may cause the TAU to hang up. Resetting the drive (status) is safest in rewind status or while the console printer is typing. Several successive RESET-START operations may be necessary to "drop" a drive.
- .03.2 Drives are tested sequentially. After each drive is tested the drive number is set in a table, but it is not typed. The table is available for display at locations 00010 to 00019. Locations 00020 to 00024 contain the channels tested. These locations are labeled "RDYTDS" and "CHANOS" respectively.

Much additional and useful information is available in the index registers (X), (locations 00025 to 00099). It is organized in the following manner:

X	ADDR	LABEL	CONTENTS
-			
1	00025	SXRl	Address - Next routine
2	00030	SXR2	Address - Last routine
3	00035	RETURN	Address - Return to test routine
4	00040	DATA	Address - Data field for Write
5	00045	RECLEN	Record length, Write & Read fields
6	00050	BBBBB	BAddress, Indexed Write & Read
7	00055	XAREOT	B, E, F, G, H address after Write/Read
8	00060	SXR3	Used
9	00065	SXR4	in
10	00070	SXRA	utility
11	00075	SXRB	routines.
12	0008 0		Not used.
13	00085	TDIND	T.D. number in Ready Table.
14	00090	CHIND	Channel number in Channel Table.
15	00095	CHSTCT	Position in table of channel constants.

The only input-output area is labeled BUFER and occupies locations 09400 to 09986.

010 T020 Page 008

Most of the tape operations are performed through the use of Write, Read and Unit Control Routines. Each of the Write, Read and Unit Control Routines has multiple points of entry. The label of the entry to a routine determines the tape operation that is performed in the routine. The labels are the same as the Autocoder mnemonics of the tape instruction to be executed. Specifically, the labels of the points of entry, and therefore the operation performed in the routine are:

RWD, BSP, WTM, SKP

WT, WTB, WTW, WTBW, WTBEW

RT, RTB, RTW, RTBW, RTBGW

(The O is not used to indicate overlap mode)

The Unit Control Routine

The Write Routine

The Read Routine

For example:

1. B WTM

causes a Write Tape Mark instruction (UxUnM) to be set in the Unit Control Routine and executed.

2. B RTBW

causes a Tape Read instruction in odd parity, load mode, (LxBnbbbbbR), to be set into the Read Routine and performed.

The Write Routine requires that the branch to it be followed by a constant that is the address of a data field. The constant can be signed or unsigned. The Write Routine moves the data from the address specified to the common input-output area (labeled "BUFER"). The sign of the data address indicates the size of the output data field in the "BUFER".

CONSTANT
Unsigned
10 Characters
Signed minus (-)
Signed plus (+)
586 Characters

In each case, a group mark-word mark is placed immediately to the right of the last character of the data field in the "BUFER".

The 586 character records are composed of nine multiples of the 64 character data field addressed and a ten character record label. The record label contains the record number and the record length and is separated from the rest of the data field by a record mark (\$\neq\$). A typical record label is 064900586\$. This is record number 649 and is 586 characters long.

The utility Write, Read and Unit Control Routines return control to the test routine from which they were entered after the operation is successfully completed. (Refer to Flow Chart, page 014.)

4.00.03.0 OPERATING HINTS AND COMMENTS Continued

.03.4 Setting TAD5 to 1 causes a halt after each tape operation. The halt is located at a point where the Read, Write and Unit Control subroutines merge into a common routine. (Refer to flow chart, page 014.) This makes it possible to display the input-output area, indicators, address registers, etc. immediately after the operation is performed. (Preliminary setups can be performed at machine speed.)

NOTE: The halt occurs after each tape operation, Unit Control operations included. Wait for the console READ or WRITE light to be on before displaying the input-output area.

- .03.5 Pressing INQUIRY REQUEST before START on the Read phase of the "LRCR Test" routine causes a STOP after reading the first character. Setting TAD5 to 1 causes a STOP after each of the succeeding read operations. This permits a visual inspection of the TAU's CHECK register, LRCR REG and VRC REG.
- .03.6 In addition to the tests for inquiry requests (BNQs) strategically located in the program, a "BNQ" is placed within the "Program Alter Routine" itself. This permits altering more than one area of the program at one time without returning to a test routine to await the next "BNQ". To accomplish this, hold down INQUIRY REQUEST while pressing INQUIRY RELEASE.

4.00.04.0 PROGRAM STOPS AND RESTARTS

.04.1 STOPS

All programmed stops are under TAD control and occur only on request. 1.

Setting TAD2 to 1 causes a halt on program detected errors. The halt is located in the "Error Control Routine" and is the only error halt used. It occurs after the error typeout and before any automatic action is taken on the error.

A STOP under control of TAD5 is provided to assist in machine debugging. Its use is explained in OPERATING HINTS & COMMENTS, section 4.00.03.4.

^{1.} There are two unique STOPs not directly under TAD control. The STOPs are in the "LRCR Test" routine following messages to set density switches. The routine is optional and under TAD control. The STOPs occur only when the "LRCR Test" routine is run.

.04.2 PROGRAM RESTARTS

After all STOPs, START causes the test to resume with the next sequential instruction. COMPUTER RESET and START returns the test to the start of the test routine in progress or the last test routine run before resetting. After the test is completed and "EOJ" is typed, COMPUTER RESET and START begins the test again at 2000.

4.00.05.0 TYPEOUTS

.05.1 NORMAL OR NON-ERROR TYPEOUTS

T020A Test Identification - typed once at the start of the test. It is not retyped.

TU xx Tape Unit Identification - channel and drive number of unit being tested. e.g. TU 12 Channel 1, Drive 2.

PASS Pass Complete - typed only on completion of all test routines on the selected tape unit.

.05.2 ERROR TYPEOUTS

All typeouts preceded by asterisks are error indication and are under TAD control. 2. Error typeouts are in four classes.

- 1. Reporting some Status Indicator set during operation when it should not have been (or was not expected.)
- 2. Reporting a failure to meet some predetermined condition, i.e., data fields fail to compare, an expected Status Indicator not set, address register at end of transfer not as expected, etc.
- 3. A "Not Ready", (1), indication or three successive errors in the first two routines (ERROR 01-ERROR 09) causes the testing of the drive to be terminated. This action is reported following the error typeout.
- 4. The B-register bit pick up and A-register drop-out test reports results in summary form. Only non zero totals are typed out.

^{1.} Not including "LRCR Test" routine which is optional.

^{2.} The summary typeouts of Class 4 are not under TAD control.

4.00.05.0 TYPEOUTS (Continued) Illustrations and explanations of error typeouts:

- 1. Status Indicator Set
 - * M%B109400W 4 05000 a b c
 - a. Instruction issued Write
 - b. d-character bit of test and branch instruction used to test indicator -4- Data Check
 - c. Starting address of routine in progress.

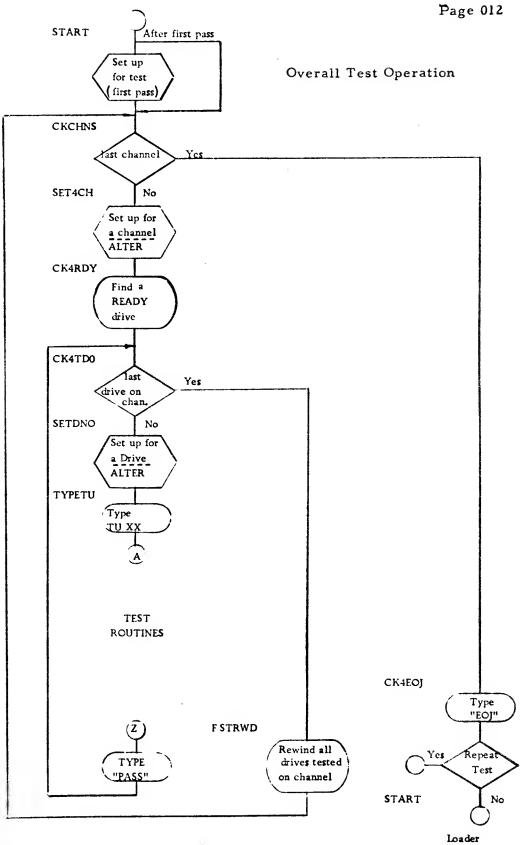
 To repeat routine ADDRESS SET to this address.
- 2. Some expected condition not met:
 - * ERROR 35 06000 a b
 - a. Error indication and code number for the condition not met. Refer to the program listing for explanation. (In the listing the error number is the label of a Set Word Mark instruction.)
 - b. Starting address of routine.

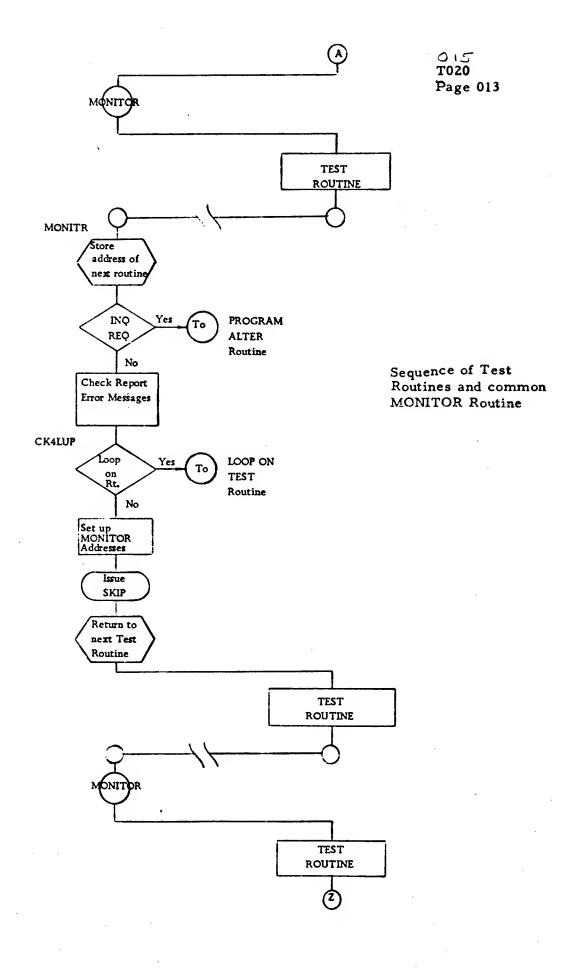
 To repeat routine ADDRESS SET to this address. 1.
- 3. Testing of tape drive terminated prematurely:
 - * DROPPED
- 4. The B-register bit pick up and A-register drop out test reports results in the manner:
 - *B 0325
 - *C-0980
 - * 1-1000
 - ab c
 - a. Indicates bit (1248ABC).

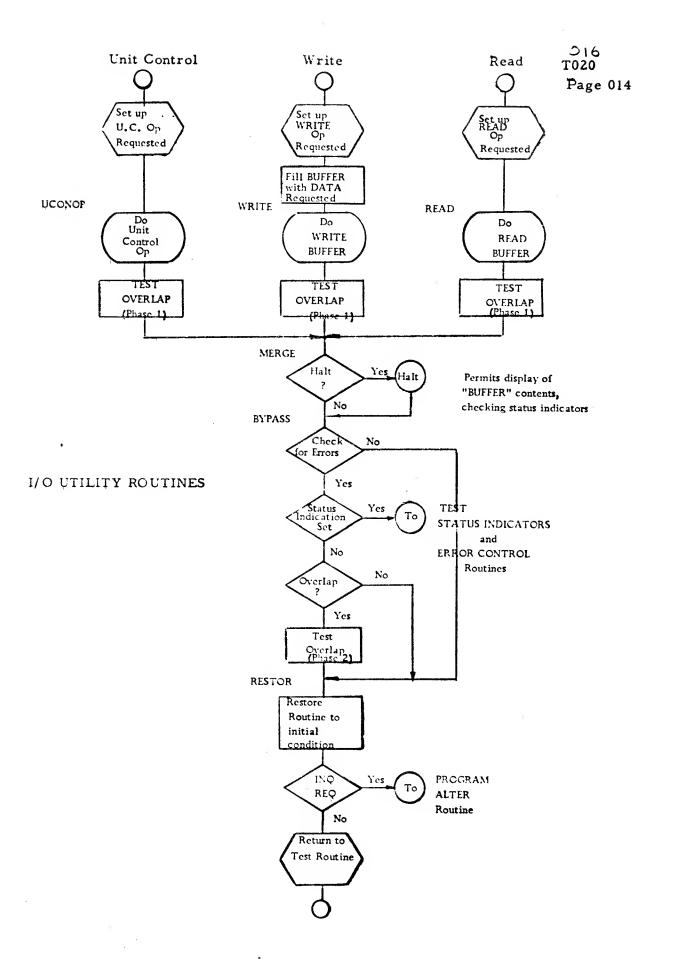
- b. Blank indicates bits picked up; hyphen, (-), indicates bits dropped.
- c. Indicates number of bits picked up or dropped.

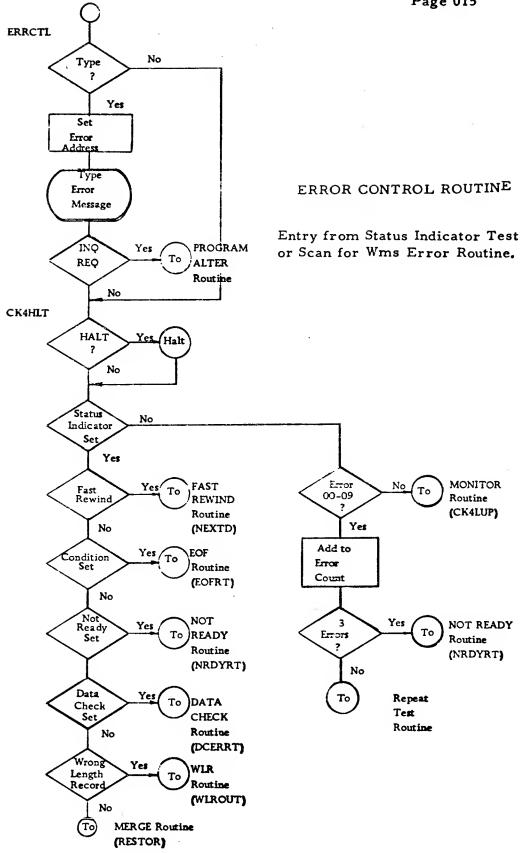
^{1.} RESET-START can be used when TAD2 is set to STOP on error.

(400)









			TAPE OPERATIONS TEST		1020	PAGE
LABEL	00000	OPERAND		CT ADDRS	UCT ION	
	CIT	2				
	LINES	36	MAX. LINES/PAGE 36			
LOADER	EQU	004	LOC OF LOAD PROGRAM			
•		ASSIGN LABELS TO INDEX REGISTERS	NDEX REGISTERS AND			
•		LOCATIONS IN STORAGE	GE			
CHSTCT	EQU	15•X	COUNT FOR CHAN SET UP			
CHIND	EQU	14•X	INDICATES CHANNEL NUMBER			
TDIND	EQU	13•X	DRIVE NUMBER IN READY TABLE			
SXRB	EQU	11,x	UTILITY INDEX REG			
SXRA	EQU	10,x	UTILITY INDEX REG			
SXR4	EQU	x*6	UTILITY INDEX REG			
SXR3	EQU	8 * X	UTILITY INDEX REG			
XAREUT	EQU	7.X	B/E/F/G/H ADDR AFTER READ/WRITE			
88888	EQU	× * 9	8-ADDR FOR INDEXED READ/WRITE			
RECLEN	EQU	5, X	RECORD LENGTH			
DATA	EQU	ו *	ADDR OF DATA FIELD			
RETURN	EQU	3.X	ADDR OF RETURN TO TEST RI			
SXR2	Equ	2.x	ADDR OF LAST ROUTINE - MONITR			
SXR1	EQU	1.x	ADDR OF NEXT ROUTING - MONITR			
•			***			
ROYTOS	EQU	10	TABLE OF READY TOS			
CHANOS	EQU	20	CHANNELS AVAILABLE			
WKAREA	EQU	163	WORK AREA			
BUFER	EQU	09400	INPUT-OUTPUT AREA			
BUFER1	EQU	BUFER £10				
BUFER2	EGU	BUFER 674	LOC OF FIRST CHAR OF			
BUFER3	EQU	BUFER&138			-	
BUFER4	EQU	BUFER £202	A GROUP, IN A RECORD			
BUFERS	EQU	BUFER £266				
BUFER6	EQU	BUFER £330	MADE UP OF MULTIPLES			
BUFER7	EQU	BUFERE394				
BUFERB	EGU	BUFER £458	OF A GROUP & A LABEL		-	
BUFER9	EQU	BUFER£522				
BUFRND	U U U	98660	LAST CHAR IN BUFER			

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PAGE 18																												
TOZO PA															,			G 01084 B	M X10 01052 R	R 01017 H	R 01079 B	R 01048 M	L \$10 00000 K	R 01048 M	R 01072 M	J 01017 Q	00000 F	
CT ADDRS		01000		1 01000	1 01001	1 01002	1 01003		1 01004	1 01005	1 01006	1 01007	1 01008	1 01009		,		7 01010	10 01017	7 01027	7 01034	7 01041	10 01048	7 01058	7 01065	7 01072	7 01079	
TAPE DPERATIONS TEST	RD TAOS ****		-	BYPASS TYPE DUTS	LOOP ON ROUTINE	HALT ON ERRORS	REPEAT PROGRAM	L TAOS ****	BYPASS OVERLAP MODE	HALT AFTER 1 1/0 OP		PERFORM LRCR TEST	BYPASS STATUS IND TYPEOUT		UP IN NOT 1 CONDITION ***	AND WILL ONLY TEST FOR 1	OUTINE	STORE RETURN ADDRESS	ENTER LOCATION TO BE ALIERED	TRY AGAIN IF 1/2/4/8	IND NOT FROM CONSOLE		ENTER DATA INTO ADDRES SPECIFIED			STAY HERE-ALTER MORE	RETURN TO PROGRAM	
OPERANO	STANDAR	01000	NOT 1	TON 00 6 6	TON 00 6 6	10N 00 6 6	TON OO E E	**** SPECIAL	10N 00 e e	10N 00 8 6	10N 00 e e	a a 00 NOT	10N 00 e e	e E	*** PROGRAM SET	AND WILL ON	*PROGRAM ALTER ROUTINE	CTLX1TE5	ADDRESE4	ENTER, M	CTLXIT	ADDRES	\$ 00000	A D D R E S . M	• 6.1	ENTER	00000	
00000		ORG		20										МОО				SBR	RCP	8EX1	BNT1	BA1	RCPW	8EX1	BA1	B N0	80	
LABEL	•			TADO	TADI	TA02	TAD3	•	TAD4	TA05	TAD6	TA07	TA08	GMWM	•	•	•	CONTRL	ENTER				ADDRES				CTLXII	•

	6		TAPE OPERATIONS TEST	5	ADORS	TOZO PINSTRUCTION	PAGE
LADEL	00240						
	ORG	1230	CONTROL INFORMATION		01230		
	ည		æ	15	01244		
	20	a 20101a	SEQ# 201 10K SYS1 UNLY	'n	01249		
ISTID	A O O	910 20 <i>9</i>	TEST IDENTIFICATION	4	01253		
LEVEL C	20	9Cii.G	SUFFIX LEVEL		01254		
	ORG	1256	*SYSTEM CUNTROL CARD		01256		
SYS1	2	6	INDICATE SYSTEM TYPE	-	01256		
			0 1410 ST0				
			1 1410 ACC				
			x 7010				
		G G	INDICATE SYSTEM SIZE	-	01257		
			0-10,1-20,3-40 K				
			5-60,7-80,9-100 K				
		re re	NOT INTERROGATED	s	01262		
		8, 6)	1-SYSTEM HAS OVERLAP	-	01263		
		(a)	NOT INTERROGATED	S	01268		
		.T	1-SYSTEM HAS CHAN 2		01269		
		(3	1-SYSTEM HAS CHAN 3	-	01210		
		6	1-SYSTEM HAS CHAN 4	-	01271		
		ര	a not interrogated	16	01287		
		949		-	01288		
•			* * * * * * * * * * * * * * * * * * * *				
•			.CONSTANTS, COUNTERS & SWITCHES				
	ORG	1086			98010		
600000	DCW	e60000e	LENGTH OF DATA FIELD	•	0100		
00000	DCW	e01000e	LENGTH OF DATA FIELD	v	01095		
C00064	DCM	e49000e	LENGTH OF DATA FIELD	S	01100		
C00586	DCM	a00586a	LENGTH OF DATA FIELD	5	01105		
C09410	DCM	a09410a	AUDR REG AFTER 10 CHARS	'n	01110		
C09411	DCM	a09411a	AOOR REG AFTER 11 CHARS	S	01115		
594603	DCW	a09465a	ADOR REG AFTER 64 CHARS	S	01120		

			TAPE OPERATIONS TEST			TO20 PAGE
LABEL	00240	OPERAND		13	ADDRS	INSTRUCTION
ZERO	EQU	00000	BASE FOR INDEXD R/W			
BPRIME	OCM	ZER0£8888	INDEXED R/W ADDRESS	\$	01125	0-#00
EOMANI	NO O	66660	ENO OF MEMORY ADORESS		01130	
WTEAOR	MO0	06660	ENO DF MEMORY-10	'n	01135	
LERROR	M O C	9EROR#		r	01140	
ALL IND	DCM	31248BA3	ALL STATUS IND		01146	
WMERCT	M C M	909	ERROR COUNT		01147	
OCCNT	DCM	909	DATA CHECK COUNTER	-	01148	
HLRCNT	DCM	80	WLR COUNT	-	01149	
RECNTI	A O	0000	RECORD COLINE			
RECNIZ	N C	0000	COUNT TO FIND LABEL		66110	
HOL O I T	OCM	00000	SAVE ADORESS	רא יו	01167	
HAFOUN	MOO	OROPOC			01167	08627
BPUCNT	OCM	00000	BIT PICK UP COUNT		01172	
COUNTO	EQU	OUMMY-6	A FIELD OF 4 ZEROS			
SAVEIT	N O C M	0000	SAVE RECORD NUMBER	4	91110	
TIMEL	MOO	90	LOOP TIME FOR SPACE 1 SEC ON 7010	~	01178	
OLACNT	MOO	000000			01184	
DELAY1	M)O	000000		•	06110	
TISW	DCM	e e	SWITCH LOCATIONS	2	01192	
MSdIO			OVERLAP INOICATOR	2	96110	
	20	EWIFIPC	TEST PATTERN SEQUENCE	'n	01199	09336
	DCM	EWIFIPB		ر د	01204	09272
	OCM	EWIFIPA	FOR A WRITE TRIGGER FREQUENCY	8	90210	80260
	M)O	ENTFTP8		8	01214	77160
	M 00	ENTFTP4	TEST ROUTINE. PATTERNS ARE	8	01219	08060
		EWIFIP2		2	01224	91060
FREQ1	MOO	EWIFTPI	WRITTEN IN ASCENDING SEQUENCE	2 0	01229	08952
	ORG	1289		0	01289	

							Ö	6,20
			TAPE OPERATIONS TEST			1020	PAGE	17
LABEL	00240	OPERAND		CT A	ADDRS	INSTRUCTION	z	
*		*INSTRUCTION ALTERA	ON ALTERATION ROUTINE				*	
•		OP CODES, X-CONTRO	X-CONTROL FIELDS & D MODS					
•		ARE ALTERED ACCORDING TO CHAN REQ	ING TO CHAN REQ					
1-A-R	SBR	SXRA	STORE ADDR OF DATA	7 0	01289	G 00074 B		
	MLNA	4 ESXRA, SXRB	SET START ADDR IN XR	12 0	01596	00 00 0	/ 62000	
IARSCN	SCNLB	09990,065xRB	SCAN TO B FIELD WM	12 0	01308	0 06660 0	- 0M.00	
	SBR	SXRB	BAR IS B FIELD WM-1	7 0	01320	G 00079 B		
	U	SXRB, 965XRA	CHECK FOR STOP ADDR.	0 11	01327	00 62000 0	60	
	В.	146SXRA	STOP ADDR. 15 HIGHER	0 2	01338	00 r		
	MLCS	165XRB, +612	MOVE CHAR TO TEST IT	12 0	01345		01368 3	
	BCE	I AR IOP . I ARUPS . O	1/0 OP CODE	12 0	01357	8 01393 0	01503 0	
	8CE		CHECK CHAR UNDER WM	0 7	01369	5 3		
	8CE		IS IT ONE IN TABLE	1 0	01370	8		
	BCE	1 ARCS I	CHAN STATUS IND OP	0 9	01371	B 01424		
	8CE		IF SO GO CHANGE IT	0	01377	8		
	BCE		IF NOT KEEP LOOKING	0	01378	3 0		
	BCE			0 1	01379	8		
	BCE	IARJOP	J OP,CK FOR GIP D-CH	9	01380	B 01443		
	80	IARSCN	SCAN TO NEXT WM	7 0	01386		c	
IARIOP	MLNS	13ESXRA,4ESXRB	ALTER X-CTL-FLD,NO.3	12 0	01393		1 420	
	MLCS	10ESXRA+2ESXRB	ALTER XI, CHAN-MUDE	12 0	01405	0 or 00 a	0.H2 3	
	80	1 ARSCN	09	0 ~	01417		0	
IARCSI	MLCS	116SXRA+16SXRB	ALTER STATUS IND OP	12 0	01424	0 15.00 a	00.H1 3	
	80	IARSCN		0 ~	01436	J 01308		
IARJOP	MLCS	76SXRB, *612	MOVE D-CH TO TEST IT	12 0	01443		01466 3	
	BCE	IAKBOL, IARDIS, 0	CHECK D-MOD CHAR	12 0	01455	8 01477 0	01507 0	
	BCE	•	IS 1T ONE	7	01467	3 2		
	BCE		OF D-CHARS USED TO	0 1	01468	9		
	BCE		TEST FOR OL IN PROC	7	69510	20		
	80	IARSCN		2 0	01410		0	
IARBOL	MLNS	12ESXRA, 7ESXRB	ALTER BOL D-MOD CHAR	12 0	01477	0 26.00 d	00.H7 1	
	80	IARSCN		~	01489	J 01308		
IARDPS	NO C	9J13XRULM9	OP CODES SCANNED FOR	20	01503			
IARDIS	; !	943219	D-MODS TO TEST UIP	4	01507			

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		TA	TAPE OPERATIONS TEST			1020	PAGE	22	
LABEL	0000	OPERAND		73	ADORS	INSTRUCTION			
•		CHANNEL CONSTANTS FOR ALTER	ALTER ROUTINE-						
•		CHAN OP CHAR- UNDVERLAP AND							
•		CHAN STATUS INDICATOR OP	OP CODE.						
•		CHAN BRANCH ON OLAP TEST	EST D-MOD CHAR						
CHCON	20	earle CH	CHANNEL 1	m	01508				
	DC#	999	OVERLAP	-	01511				
	၁၀		CHANNEL 2	m	01514				
	M DC	0	OVERLAP	7	01515				
) 0		CHANNEL 3	m	01518				
	M O C M		OVERLAP	-	61510				
	၁၀	e,	CHANNEL 4	m	01522				
	DCM	() ()	OVERLAP	7	01523				
GOPUS	рсм	SEFGHS 0 .	D MODS FOR G CCCCC X	4	01524				
•									
÷	-	SET UP FOR CHANNEL TO BE	BE TESTED						
SET4CH	S	CHSTCT ZERO	RO CH STATUS COUNT	•	01528	s 00099			
	S	ZERO	NO CHAN COUNTER	-	01534				
CKCHNS	BCE	CK4EDJ, CHANDS&CHIND,	LAST CH ON SYSTEM	12	01535	B 06603	00MK0		
	MRC	CHCONECHSTCT.CHSTAT SET	ET CH CONS IN ALTER RT	12	01547	0 01EM8	# 86110		
	8CE	4,1	Ó	12	01559	B 01613	01004 1		
	MR C	CHCONE3ECHSTCT, CHSTAT	OVERLAPPED OP	12	01571	D OLEAL	# 86110		
	MLCS	3&CH	SICT. TESTXIEII XI CHAR FOR OL	12	01583	D OIEAL	07706 3		
	3	AREOTO DON	DONT G CCCC D YET	•	01595	11610 п			
	MLCS	D.AREOTOE6	SET U MOD CHAR	12	01601	D OLEK4	07923 3		
UPSTCT	∢ :		COUNTER BY 4	11	01613	A 08701	66000		
	MLNS	CHANOSECHIND, TUIDNO-1	SET CH # IN TAPE UNIT I.D.	15	01624		01831 1		
	⋖	٥ م		11	01636	A 08681	96000		
	MLCS			15 (15910	0 01798	01735 3		
	MLCS	• CKDRIVE10		15	01659	66/10 0	01744 3		
	NS.	LRCRCK&1 SET	TO RUN LRCR FEST ON 1 DRIVE	•	17910	02300			

025 PAGE 23		00009 V V 1 787 1	3 - 2		OI OI
T020 Instruction	\$ 00019 \$ \$ 00089		100 09	J 01289 08585 01801	R 01809 U #U0 R R 01809 J 09344
ADDRS	01677 01683 01684 01690	01696 01707 01708 01715	01734 01751 01753 01763	01781 01792 01797 01798 01799 01800	01802 01809 01814 01821 01832
CT	° 0 - 0 0	11 1 7 7 12	10 10 115 115 116 117 117 117 117 117 117 117 117 117	- W 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
TAPE OPERATIONS TEST	READY DRIVES ON A CHANNEL READY TABLE TO ZEROS ZERO TAPE DRIVE CNTR SET SWITCH	ADD 1 TO TD UNIT NO ALL DRIVES ON CHAN TESTED, RWD ALL CHECK FOR NEXT CHANNEL MDVE DRIVE NUMBER TO WRITE DP	10.BUFER TRY TO WRITE A RECORD NEXTOR NDT RDY.SKIP IT UNITNO.TOND SET TO ND TO ALIER TD UNITNO.TUIDNO SET TAPE DRIVE # IN TYPEDUT CK4TDO£1 SET SWITCH ALTER INSTRUCTIONS FOR DRIVE SELECTED	ALTER FUR CH REQUEST ADDR. TD START SCAN ADDR. TD STOP SCAN 1/D SPECIFIC MDUE CH-STATUS IND OP CDE D-MDD TO TEST OVRLAP X-CIRL FIELD POS 3	RESET INTERLOCK REWIND DRIVE TRY AGAIN ON ANY INDICATOR TYPE TAPE DRIVE IDENTIFICATION TAPE UNIT IDENTITY BEGIN TEST ROUTINES
	RDYTOSE9 TOIND CK4TDOSI	ONE, ATONO FSTRWD CKCHNS ATONO, UNITNO	10.BUFER NEXTOR UNITNO.TOTONO UNITNO.TUTONO CK4TDO&1	I-A-R UPREND TDNO TDNO B B B B B B B B B B B B B B B B B B B	•£1 10 •-11 TYPEIT atu 00a,G BEGIN
00000	ท ท ท <u>จ</u>	A NOPWM BZ BZ MLNS	MLNS MLNS MLNS SW MLNS	, MOO OO OO OO OO	B B B B B B B B B B B B B B B B B B B
LABEL	CK4RDY	NEXTOR CK4TDO	СКО R 1.	ALTER CHSTAT TDNO	TULONO

			TAPE OPERATIONS TEST			1020	PAGE 24
LABEL	00000	OPERAND		CI	ADORS	INSTRUCTION	
u		*MONITOR ROUTINE					
MONITR	SBR	SXRI	RETURN ADORESS	7	01841	G 00029 B	
	BAI	• 6.1	RESET 1/0 INTERLOCK	7	01848	R 01855 M	
	8N0	CONTRL	TO PROGRAM CONTROL ROUTINE	7	01855	9 01010 c	
	80	CKAWMS	CHECK FUR ERRURS	~	01862	92080 f	
CK4LUP	NOPER			-	01869	z	
	82	UPDATEE12	BYPASS LOOP CHECK	1	01870	J 01932	
	BCE	WHICH1, TAD1,1	CHK FOR LOOP ON ROUT	12	01877	8 01896 01001	1 1
	6 0	UPDATE	BYPASS LOOP CHECK	1	01889	J 01920	
WHICHI	ပ	SXR1, SXR2	COMPARE ROUT ADDRS	==	01896	C 00029 00034	
	NS	LRCRCKE1	SET TO LOOP ON LRCR CKS	9	01907	, 02906	
	91	0 E S X R 2	LOOP ON ROUTINE	~	61610	J 0000 C	
UPDATE	MLNB	SXR1, SXR2	SET ADDR FOR LOUP RT	12	01920	U 00029 00034	7
	Œ C	CK4LUP&1	RESTORE LOOP ON RT	9	01932	n 01870	
	s	WMERCT	ZERO ERROR COUNT	٥	01938	S 01147	
	œ	0 X	TO CKID/COACC DOMITIME		77010		
	o.		IO SKIPZEKASE KUULINE	•	01944	J 06932	
	80	0 £ S X R 1	RETURN	7	15610	0#000 F	
	I		DEFINE PRECEDING BRANCH LENGTH	-	01958	•	
•			8 8 8 9 9				
*	•						
	ORG	2000	PROGRAM STARTS HERE		05000		
START	NOP				00020	z	
	60	SETUP	INITIALI LATION	~	02001	00460 F	
REPEAT	50	SE14CH	SET UP FOR A CHANNEL	-	02008	J 01528	
			THEN SET UP FOR A DRIVE				
8EG1N	MOP		BEGIN TEST ROUTINES	-	02015	z	
•		TEST DRIVES SEQUEN	TEST ORIVES SEQUENTIALLY AS THEY AKE FOUND READY				
•		DRIVE SHOULO BE AT	L.P. OR ON WAY IO L.P.				
•		AFTER REWINDING					

				TAPE OPERATIONS TEST			1020	PAGE
LABEL		00240	OPERAND		13	ADORS	INSTRUCTION	
•		,	*TEST REWIND OPERATION	NOI				
•			RWD AT LP-SPACE FOR	AT LP-SPACE FURMARD-RWD TO LP				
		©	MONITR	TO MONITOR ROUTINE	-	02016	J 01841	
			RWD	TO REWIND ROUTINE	7	02023	J 06875	
		RWD	11	ISSUE REWIND AGAIN	8	02030	U XUI R	
ERROR	01	NS	ERRO1	BUSY AT L'P	9	02035	. 00200	
		8681	*67	CHECK FOR BUSY	1	02041	R 02054 2	
			ERR01	DU NOT LEAVE ERROR SET ON	9	02048	a 00202	
•			200	A PARON T RANGE	7	02054	J 01841	
		ء ء	4 T T T T T T T T T T T T T T T T T T T	SPACE AWAY FROM L.P.	S	02061	,	1
		BEXI	1 3 4 8 3 4 1 8 8 9	8RANCH ON 1/4/8/A/8	7	02066	R 02080 B	
		8A1	*-18	TRY AGAIN IF BUSY	7	02073	R 02061 H	
		Z.	RWDSWEI	SET SWITCH	9	02080	п 02092	
RWD3		RWD	11	DRIVE SHOULD BE BUSY	5	02086	U *U1 R	
RWDSW		MMdON		SPACING WHEN RWD3 IS	-	02091	z	
		80	RWDBZY	ISSUED FIRST TIME	1	02092	J 02124	
		NS	RWDSW & 1	RESET RWDSW AFTER	9	02039		
		8681	RW03	1 ST PASS-IF NOT BZY	7	02105	R 02086 2	
ERROR	02	MS	ERK02	NOW DID NOT SPACE.	9	02112	. 00203	
ERROR	03	SE	ERR03	IND SET ON RWD	9	02118	• 00200	
RWDBZY		8EX1	*£14,8	BRANCH ON 1/4/8/A/B	1	02124	R 02144 B	
		BAI	RW03	TRY AGAIN IF BUSY	7	02131	R 02086 M	
		3	ERR03	DO NOT L'EAVE ERROR SET ON	9	02138	a 00204	
RWD4		RWD	11	ISSUE RWD TO CK BUSY	S	02144		
		8681	13*	BUSY NOW- OK CONTINUE	-	02149	R 02162 2	
ERROR	40	N.	ERR04	NOT BUSY- NO REWIND	9	02156	• 00500	
		α	XI I VO		7	02162	J 01841	
\$ C 7 a) ec		REWIND AT LOAD POINT	7	02169	J 06875	
RWD6		RWD	11	AND AGAIN TO CK BUSY	3	02176	U TOI R	
FRROR	9	NS.	ERR05	WENT BUSY AT LP	9	02181	• 00200	
		8681	13*	SHOULD NOT BE BUSY	1	02187	R 02200 2	
		3	ERR05	DO NOT LEAVE ERROR SET ON	•	02194	a 00206	
•				****				

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				TAPE OPERATIONS TEST			F020	PAGE	97
LABEL		OPCOD	OPERAND		5	ADDRS	INSTRUCTION		
•			*TEST BACKSPACE UP	PACE UPERATION					
•			BSP AT LP-SPACE F	SPACE FORWARD-BSP TO LP					
		6 0	MONITR		~	02200	J 01841		
BSPTST		60	вѕр	BACKSPACE AT LP	7	02207	J 06894		
BSP2		ВЅР	11	ISSUE BSP AGAIN	S	02214	U #U1 B		
ERROR	90	N.	ERR06	BSP AT LP WENT BUSY	9	02219	. 00207		
		8C81	13.	SHOULD NOT GET BUSY	~	02225	R 02238 2		
		3	ERR06	DO NOT LEAVE ERROR SET ON	•	02232	а 00207		
		63	MONITR		_	02238	J 01841		
		3	ZUL, A	SPACE AWAY FROM L.P.	ĸ	02245			
		BEX1	3. 8.83.	BRANCH ON 1/4/8/A/6	_	02250	R 02264 B		
		8 A 1	•-18	TRY AGAIN IF BUSY	^	02257	R 02245 M		
BSP3		60	ВЅР	BACKSPACE AGAIN	_	02264	76890 F		
		3	BSPSW £1	SET SWITCH	9	02271	п 02283		
BSP4		BSP	11	ISSUE BSP AGAIN	S	02277	U #U1 B		
BSPSW		NMdON				02282	z		
		83	BSPBZY	CHECK FOR BUSY ON	7	02283	J 02315		
		MS	BSPSW&1	FIRST PASS	9	05250	, 02283		
		8C81	8584	BUSY- OK	7	96220	R 02277 2		
ERROR	07	N.	ERR07	NO- FAILED TO BSP	9	02303	• 00208		
ERROR	90	S	ERROB	SOME IND WAS SET	9	02309	, 60200		
BSPBZY		BEX1	*£14,B	BRANCH ON 1/4/8/A/8	7	02315	R 02335 B		
		BAI	BSP4		2	02322	R 02277 H		
		3	ERROB	DO NOT LEAVE ERKOR SET ON	•	02329	в 00200		
		ø	MONITR	REPORT ERROR	7	02335	1 01841		
8525		6 0	вѕр	BACKSPACE AT LP	~	02342	J 06894		
BSP6		ВЅР	11	ISSUE BSP TO CK BUSY	S	02349	0 401 8		
ERROR	60	N.	ERR09	BSP THRU LP	9	02354	. 00210		
		8081	13.	BUSY NOW- ERROR	7	02360	R 02373 2		
		Č.	ERR 09	DO NOT LEAVE ERROR SET UN	•	02367	a 00210		
•				• • • •					
•			BACKSPACE MOVES TAPE	APE BACKWAKO - STOPS AT LP					

620	E 27																														
Ū	PAGE	NO			¥				01192 1			×													01191 1			01192 1			
	T020	INSTRUCTION		J 01841	J 02387	J 06913	J 06894	J 06792	V 02426	00211	00212	J 02445 I	a 00212					J 01841	J 07027	08980	J 06913	96890 f) 06894	J 06792	V 02510	• 00213	J 06792	V 02535	• 00214		
	-	ADDRS		02373	02380	02387	02394	02401	02408	02420	02426	02432	02439					02445	02452	02463	02464	02471	02478	02485	02492	02504	02510	02517	02529		
		CT		1	1	7	~	7	12	9	9	7	9		·			7	7	ß	~	7	~	2	12	9	7	12	9		
	TAPE OPERATIONS TEST		TAPE MARK OPERATION TEST FOR TI ON.TURN TI OFF		TURN T.I. OFF IN CASE IT WAS ON	WRITE A TAPE MAKK	BSP OVER TM	SPACE OVER TM	T.I. SENSED IN TIME	T.I. NEVER SET ON	DIDNT TURN T.I. OFF	TEST T.I. TO BE SURE ITS OFF	DO NOT LEAVE ERROR SET ON	• • • • • • • • • • • • • • • • • • • •		FRATION	OVER ONE RECORD ONLY		M XUN BUFER W	TEN GROUP MARKS	WRITE TAPE MARK				OKDID NOT BR ON TI		SPACE OVER TH	T.I. SENSED		****	SPACE MOVES OVER ONLY ONE RECORD
	. (OPERAND	•TEST WRITE TA WTM-SPACE•TES	MONITR	* 21	I	BSP	SPACE	• £7, TISW	ERR10	ERR11	• 6.7	ERRII			*TEST SPACE OPERATION	SHOULD SPACE OVER ONE	MONITR	× -	TENGMS	E H	ВЅР	BSP	SPACE	• £7,115W-1	ERK12	SPACE	. £7, TISW	ERR13		SPACE MOVES
		00240		60	811	6 0	60	60		NS	N	811	3					€	60	DCW	8	60	60	60	30	S	80	8 0	MS		
										10	11															12	•		13		
		LABEL	• •							ERROR	ERROR			•		•	•									ERROR			ERROR	•	•

				TAPE OPERATIONS TEST			1020	PAGE	28
LABEL		OPCOD	OPERAND		5	ADDRS	INSTRUCTION		
•		-	*TEST ERASE/SKIP OPERATION	ERATION					
		60	MONITR		~	02535	J 01841		
		80	X LX	WRITE IM	7	02542	J 06913		
		63	ELE	HRITE TM	_	02549	J 06913		
		83	SKF	TO SKIP/ERASE ROUTINE	~	02556	J 06932		
		8	E	WRITE ANOTHER TM	-	02563	J 06913		
		60	ВЅР		~	02570	7 06894		
		80	вѕр		~	02577	J 06894		
		6 0	вѕр		1	02584	J 06894		
		80	SPACE	SPACE OVER TM	~	02591	J 06792		
		W 0	* £7 , TISW	T.I. SENSED	12	02598	V 02616 01192	2 2	
ERROR	±	SH	ERR14		9	07970	. 00215		
		83	SPACE		1	91970	J 06792		
		B.W.	*£7,11SW		12	02623	V 02641 01192	2 #	
ERROR	15	SH	ERR15		•	02635	• 00216		
		MLNA	DLACNT, DELAY!	SAVE DELAY 1 COUNT	12	02641	0 01184 01190	, 0	
		⋖	DELAY1	DOUBLE DELAY COUNT	9	02653	A 01190		
		⋖	DLACNT, DELAY1		11	02659	A 01184 01190	0	
		63	SPACE	SPACE OVER 2ND TM	1	07970	J 06792		
		B.W.	*67,TISW	T.I. SENSED	12	02677	V 02695 01192	2 1	
ERROR	16	NS	ERR16		9	02689	. 00217		
		U	DELAY1. DLACNT	COMPARE TIME INTERVAL	11	02695	C 01190 01184	*	
		ВН	.67		-	02706	J 02719 U		
ERROR	11	N S	ERK17		9	02713	• 00218		
•				***					
•			SKIP/ERASE WORKS						

)	;
				TAPE OPERATIONS TEST				PAGE	29
LABEL		OPCOD	OPERAND		5	ADDRS	INSTRUCTION		
•			*TEST STATUS INDICATO	IUS INDICATORS AND ODD PARITY LAICH	•				
•			X	, TEST FOR EOF					
		5 0	MONITR		~	02719	J 01641		
		60		WRITE A TAPE MAKK	1	02726	J 06913		
Ť		6 2	8SP E	BSP OVER TM	-	02733	J 06894		
		, MS	BYPASSE1	DO ERROR CHECKING HERE	9	02740	, 07651		
		8	RT	RO TM M XUN BUFER R	~	02746	J 07420		
		BEF1	23.	CONDITION SET, OK	1	02753	R 02766 8		
ERROR	20	MS	ERR20		9	02760	. 00221		
		BWL1	1 23.	WLR SHOULD BE SET	1	02766	R 02779 -		
ERROR	21	MS	ERR21		9	02113	• 00222		
		8EX1	* £8, X	ANY OTHER IND SET	~	02779	R 02793 X		
		80	• £7		~	02786	J 02799		
ERROR	22	MS	ERR22		9	02793	. 00223		
			READ IM ODD PARITY, TEST FOR EDF	TEST FOR EOF & UC					
			ALSO 1ST TEST OF ODG	TEST OF 000 RED LATCH					
		€	MONITR		7	02799	J 01841		
		NS	AREOTO	SAFE TO STORE E NOW	9	02806	. 07917		
		8	X LX	WRITE A TAPE MARK	7	02812	J 06913		
		83	8SP F	BSP OVER TM	7	02819	J 06894		
		MS	BYPASSE1 (OO ERROR CHECKING HERE	9	02826	15920 +		
		8	RTB	RO TM M XBN BUFER R	1	02832	J 07438		
		BEF1		CONDITION SET, OK	~	02839	R 02852 8		
ERROR	23	N.S.	ERR23		9	02846	. 00224		
		BWL 1	• £7	WLR SHOULD BE SET	~	02852	R 02865 -		
ERROR	54	MS	ERR24 .		•	02859	. 00225		
		8ER1	13.	DC SHOULD BE SET	~	02865	R 02878 4		
ERROR	25	NS	ERR25		9	02872	. 00226		
		BEXI	*£8,T	TEST FOR ANY OTHERS	7	02878	R 02892 T		
		8	• £.7		7	02885	J 02898		
ERROR	56	·	ERR26		9	02892	, 00227		

			TAPE OPERATIONS TEST			1020	PAGE	30
LABEL	00000	OPCOD OPERAND		5	ADDRS	INSTRUCTION		
ŧ		*LRCR TEST						
•		WRITE AT 200 BPI -	1248ABC					
	œ	MONITR		1	02898	J 01841		
*Jaja	N A			-	05305	z		
	T.	* £8. TAD7.1	BYPASS IF TAD NOT SET	12	02906	8 02925 01007	1 10	
	, , , ,	NOLRCR	BYPASS LRCR TEST	~	02918	J 03185		
	. Š	LRCRCKEI	DONI REPEAT TIL NEXT CHAN	9	02925	а 02906		
	• • •	2 X	REWIND	1	02931	J 06875		
	. 60	TYPEIT		~	02938	J 09344		
) C	aser 10 200 BPIa,6	aser to 200 BPIa,6 SET DENSITY SWITCH	14	02958			
	_			1	03670	•		
	: 2	LKARFA		9	02961	/ 00163		
	S W	GMWM.WKAREA-62		12	02967	0 01009 00101	7 10	
	A.V.	A1817£1	SET STARTING ADDR IN INDEX REG	9	02979	\$ 09344		
	SAR	SXK4		~	02985	₩ 69000 9		
CETNYT	MICS	DESKR4.WKAREA-63	SET UP CHARACTER	12	02992	0 00:40 00100	30	
	8 4 7	SYR4		4	03004	6 0000 9		
	ć o			~	03011	J 07045		
	3	A 20 2 1	DATA TAKEN FROM HERE	Ś	03022	00163		
	; ; ; ;	SEINXT, 165XR4	WRITE 1 2 4 8 A B C BITS	12	03023	V 02992 00.+1		

							Ö	99. 09. 0
			TAPE OPERATIONS TEST		¢	1020	PAGE	31
LABEL	000	OPCOD OPERAND		T	ADDRS	INSTRUCTION	Z 5	
•		LRCR TEST ROUTINE	CONTINUED					
- •		READ AT 556 BPI						
	60	RHD	REWIND	۰ 0	03035	J 06875		
	80	TYPEIT		7 0	03042	J 09344		
	DCM		aset to 556 BPla,G Set Density Switch	14 0	03062			
	I		SET TADS TO 1 FOR STOP	1 0	03064	•		
	S	RECNTI	ZERO RECORD COUNT	9	03065	S 01153		
CKALL 7	BCE	NOLRCR, RECNT1,7	ALL DONE	12 0	03071	8 03185 0	01153 7	
	NS	BYPASSE1	DO ERROR CHECKING HERE	9	03083	07651		
	60	RTB		7 0	03089	J 07438		
	⋖	ONE, RECNII	ADD TO COUNT	11 0	96060	A 08681 0	01153	
	BER1	1 +67	BETTER GET DATA CHK	7 0	03107	R 03120 4		
ERROR	MS 06	ERR90		9	03114	16200 •		
	BCE	• E8, BUFER, •	CHARACTER MUST NOT BE AN *	12 0	03150	8 03139 0	• 00%60	
	60	13.		7 0	03132	J 03145		
ERKOR	91 SW	ERR91		9	03139	00292		
	BEX1	1 *68,2	BRANCH UN A/8/1	7 0	03145	R 03159 &		
	80	13.		7 0	03152	J 03165		
ERROR	92 SW	ERR92		9	03159	, 00293		
	N	CK4LUP&1	DONT LOOP HERE	9	03165	01810		
	69	MONITR		7 0	03171	J 01841		
	60	CKALL7		7 0	03178	J 03071		
•			***					

				TAPE UPERATIONS TEST			T020 PAGE 3	32
LABEL		0020	OPCOD OPERAND		5	ADDRS	INSTRUCTION	
•		-	*TEST END OF XFER	OF XFER ON WRITE AND READ				
•			WRITE 10 CHAR REC	CHAR RECORD- READ INTO 10 CHAR AREA				
NOLRCR		€	MONITR		1	03185	J 01841	
		S	TENGMS	BE SURE NO WM	9	03192	n 08680	
		€	E E	M XUN BUFER W	1	03198	J 07027	
		DCW	TENGHS	10 GROUP MARKS	2	03209	08980	
		U	XAREOT, CO9411	COMP ADUR REG TO 09411	11	03210	C 00059 01115	
		8 E	*67	S/8 EQU TO GMWM & 1	1	03221	J 03234 S	
ERROR	27	NS	ERR27		9	03228	• 00228	
		80	ВЅР		_	03234	J 06894	
		8	RT		7	03241	J 07420	
		v	X AREOT, C09411	COMP ADDR REG TO 09411	11	03248	C 00059 01115	
		8 E	<i>t</i> 3.	S/B EQU TO GMWM & 1	1	03259	J 03272 S	
ERROR	88	NS	ERK 28		9	03266	• 00229	
•			WRITE 10 CHAR REC	RECORD- READ INTO 9 CHAR AREA				
		80	MONITR		4	03272	J 01841	
		3	TENGMS	CLEAR WM IN CASE SET	•	03279	n 08680	
		80	Z.		1	03285	J 07027	
		DCW	TENGMS		'n	03296	08880	
		æ	вѕр		_	03297	7 06894	
		MLNA	C00009. RECLEN	SET REC LEN FOR 9 CHARS	12	03304	0 01090 00049 /	
		NS.	BYPASSE1	DO ERROR CHECKING HERE	9	91880	• 07651	
		æ	RI		1	03322	J 07420	
		v	XAREUT, CO9410	COMP ADDR REG TO 09410	11	03329	C 00059 01110	
		8 E	*67	S/B EDU TO GMWM E 1	7	03340	J 03353 S	
ERROR	59	NS	ERR29		9	03347	• 00230	
		BWL1	13*	EXPECT WLR	~	03353	R 03366 -	
ERROR	30	NS	ERR 30		9	03360	, 00231	
		BEX1	* £ 8 , \$	ANY OTHER IND SET	_	03366	R 03380 S	
		6 0	13.		~	03373	J 03386	
ERROR	31	R S	ERR31		•	03380	• 00232	

								035
				TAPE OPERATIONS TEST			TOZO PAGE	33
LABEL	ō	OPCOD OPE	OPERANO		CT AD	ADORS	INSTRUCTION	
•		*	WRITE 9 CHAR RECORD	RECORD-READ INTO 10 CHAR AREA				
	60	NON	MONITR		7 03	03386	J 01841	
	MS		TENGMS	SET WM TO TEST EOT	6 03	03393	08980	
	80				7 03	03399	J 07027	
	™		TENGMS		50	03410	08980	
	U		XAREDT, CO9410	COMP ADUR REG TO 09410	11 03	03411	01110 65000 0	
	8 E		_	S/8 EQU TO GMWM 6 1 ?	7 03	03422	J 03435 S	
ERROR	32 SW	H ERR32	132		9	03459	, 00233	
			•		7 0	03435	J 06894	
	NS		BYPASSE1	ERROR CHECKING HERE	9	03442	, 07651	
	80				7 0	03448	J 07420	
	U	XAR	X AREOT, C09410	COMP ADDR REG TO 09410	11 0	03455	C 00059 01110	
	BE	F + £7		S/B EQU TO GMWM 6 1	7	03466	J 03479 S	
ERROR	33 SW		ERR33		9	03473	, 00234	
	8	BWL1 • £7		WLR SHOULD BE SET	7	03479	R 03492 -	
FROR	34 SW		ERK 34		9	03486	, 00235	
		5	5 483 •	CHECK FOR NR & DC	7 0	03492	R 03506 5	
	æ		4		7 0	03499	J 03512	
ERROR	35 SW		ERR35		9	90380	, 00236	
			TENGMS	BE SURE NO WM	9	03512	g 08980 m	
•								

			TAPE UPERATIONS TEST			1020	PAGE	34
LABEL	0 000	OPERANO		5	ADDRS	INSTRUCTION	NO	
		*TEST NORMAL READ	READ & WRITE AT EOM					
	60	MONITR		1	03518	J 01841		
	MLNA	WTEADR, BBBBB	SET ADOR IN X-REG	12	03525	0 01135 0	/ 45000	
	cs	988888	CLEAR TOP 10 LOCS	•	03537	6:+00 /		
	MLCS	TENGMS,9688888	MOVE 10 GMS TO EOM	12	03543	6 08680 00	04.93	
	MLCS				03555	0		
	MLCS			-	03556	0		
	MLCS			-	03557	0		
	MLCS			-	03558	0		
	MLCS			-	03559	0		
	MLCS	٠		-	03560	ū		
	MLCS				03561	0		
	MLCS			-	03562	0		
	MLCS			-	03563	0		
	E S	BPRIMWEI	SET SW TO MDO WE ADR	9	03564	. 07345		
	6 0	<u></u>	HRITE FROM MOD ADOR	7	03570	J 07027		
	₩ 00	DUMMY	DUMMY WRITE FIELO	s	03581	08760		
	U	XAREDT, EDMANI	CHK FOR EOM & 1	11	03582	C 00029 0	01130	
	B E	13.		1	03593	J 03606 S		
ERROR 36	NS	ERR36		•	03600	, 00237		
	æ	ВЅР		1	90960	J 06894		
	cs	9268888	CLEAR TOP 10 LOCS	9	03613	£:+00 /		
	SK	BPRIMREI	SET SW TO MOO RE AOR	9	03619	. 07562		
	60	RT	READ INTO MOD AUDR	7	03625	J 07420		
	v	XAREDT, EDMAN1	CHK FOR EOM & 1	11	03632	C 00059 01	01130	
	39	13.		7	03643	J 03656 S		
ERROR 37	SE	ERR37		9	03850	• 00238		

LABEL		00040	OPERAND	TAPE OPERATIONS TEST	5	ADDRS	T020 PAGE INSTRUCTION	35
•			TEST WRONG LENGTH	SPECIFICALLY				
•			FORCE WLR BY WRAP	A RGUND				
		60	MONITR		-	03656	J 01841	
		MLNA	W TEADR . BBBBB	SET ADDR IN X-REG	12 (03663		
		cs	968888	CLEAR TOP 10 LOGS	9	03675	6°**00 /	
		MLCS	TENGMS, 96BBBBB	MOVE 10 GMS TO EDM	12 (03681	0 08980 00#°9 3	
		MLCS			7	03693	Q	
		MLCS			7	03694	0	
		MLCS			-	03695	0	
		MLCS			-	96960	Q	
		MLCS			-	16960	. 0	
		MLCS			7	86980	O	
		MLCS			-	03699	0	
		MLCS			1	03700	Q	
		MLCS			-	03701	O	
		SW	BPRIMME1	SET SW TO MOD WT ADR	9	03702	, 07345	
		8	, <u> </u>	- WRITE FROM MOD ADOR	1	03708	J 07021	
		DCW	DUMMY	DUMMY WRITE FIELD	Š	03719	08760	
		8	вѕр		^	03720	J 06894	
		cs	988888	CLEAR TOP 10 LOCS	•	03727	6;+00 /	
		4	ONE, 88888	FORCE WLR BY RAPARND	11	03733	A 08681 00054	
		NS	BPRIMREI	SET SW TO MOD RT ADR	9	03744	• 07562	
		NS	BYPASSE1		•	03750	, 07651	
		83	RT	READ INTO MOD ADDR	7	95160	J 07420	
		U	XAREUT, EOMAN1	CHK FOR EUM & 1	11	03763	C 00059 01130	
		8 E	*67		7	9114	J 03787 S	
ERROR	38	NS.	ERR38		9	03781	, 00239	
		BWL 1	+67	S/B SET ON RAP-A-RND	~	03787	R 03800 -	
ERROR	39	SE	ERR39		9	03794	• 00240	
		8EX1	* £8, \$	ANY OTHER IND SET	~	03800	R 03814 S	
		80	*67		~	03807	J 03820	
ERROR	40	NS	ERR40		•	03814	, 00241	

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O PAGE	INSTRUCTION		01841	01135 00054 /	-6. +00	08680 004,9 3										07345	J 07027	09	06894	6; ‡00	08681 00054	07562	07651	07420	00059 01130	03951 S	00242	- 59660	00243	03978 S	03984	00244	
1020	SNI		7	٥	0	0	٥	Q	0	0	0	٥	a	٥	0	•	0	08760	Ö	0	S	•	•	0	ပ ပ	7	•	∞	•	0	Ö	5	
	ADORS		03820	03827	03839	03845	03857	03858	03859	03860	03861	03862	03863	03864	03865	03866	03872	03883	03884	16860	03897	03908	03914	03920	03927	03938	03945	03951	03958	03964	03971	03978	
	C1		1	12	9	12	-	-	-	-	-	,-4	-	-	-	9	~	S	~	9	=	9	9	1	11	~	9	~	9	1	7	9	
TAPE OPERATIONS TEST		BY FALLING I CHAR SHORT		SET ADDR IN X-REG	CLEAR TOP 10 LOGS	MOVE 10 GMS TO EDM											WRITE FROM MOD ADOR	DUMMY WRITE FIELD		CLEAR TOP 10 LOCS	FORCE MLR ON 1 SHORT		CHECKING DONE HERE	READ INTO MOD ADDR	CHK FOR EOM & 1					ANY OTHER IND SET			****
	OPERAND	FORCE WLR BY FA	MONITR	WTEADR, BBBBB	9888836	TENGMS,9688888										BPRIMMEI	-	DUMMY	вѕр	8888836	ONE, BBBBB	BPRIMRE1	BYPASSE1	RT	XAREOT, EOMANI	+67	ERR41	13.	ERR42	* £ 8 , Š	13.	ERR43	
	OPCOO		80	MLNA	cs	MLCS	MLCS	MLCS	MLCS	MLCS	MLCS	MLCS	MLCS	MLCS	MLCS	SE	S	DCM	6 0	cs	S	N	N	9	ပ	9 E	NS	DWL 1	N	BEXI	5 0	N.	
																											7		45			43	
	LABEL	•																									ERROR		ERROR			ERROR	•

			TABE DEFRATIONS TEST		1020 PAGE 37
LABEL	OPCOO	OPERAND		CT ADDRS	S INSTRUCTION
•		•TEST WRITE TO-RE	TO-READ TO END OF MEMORY		
	60	MONITR		7 03984	14 J 01841
	MLNA	WIEADR, BBBBB	SET ADDR IN X-REG	12 03991	3
	SS	968888	CLEAR TOP 10 LOCS	6 04003	6 \$00 /
	MLCS	TENGMS, 9EBBBBB	MUYE 10 GMS TO EOM	12 04009	9 0 08680 00 4 9 3
	MLCS			1 04021	21 0
	MLCS			1 04022	22 D
	MLCS			1 04023	33 D
	MLCS			1 04024	24 D
	MLCS			1 04025	25 D
	MLCS			1 04026	n 97
	MLCS			1 04027	27 D
	MLCS			1 04028	28 D
	MLCS			1 04029	٥
	N	468888	SET WM TO TEST EOT	6 04030	30 • 00#.4
	N	8 PRIMWE1		6 04036	36 , 07345
	æ	WTBEW	WRITE TO EOM FROM MODIFIED ADDR	7 04042	42 J 07099
	DCM	DUMMY	DUMMY WRITE FIELD	5 04053	80
	v	XAREOT, EDMAN1	CHK FOR EDM & 1	11 04054	54 C 00059 01130
	8E	23*		7 04065	55 J 04078 S
ERROR 45	N.	ERR45		6 04072	72 , 00246
	82	вѕь		7 04078	7
	cs	988888	CLEAR TOP 10 LOCS	6 04085	6: +00 /
	MLCHS	GMWM, 5688888	SET GM WM. TEST XFER	12 04091	1 5. 00 60010 d 16
	N	BPRIMREI		6 04103	03 • 07562
	63	RTBGW	READ TO EOM INTO MOD ADUR	7 04109	09 J 07492
	ပ	XAREOT, EDMAN1	CHK FDR EOM & 1	11 04116	16 C 06059 01130
	9E	13*		7 04127	27 J 04140 S
ERROR 46	SE	ERK46		6 04134	34 , 00247

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T020	ADDRS INSTRUCTION
	ADDRS
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ATIONS	
TAPE OPERATIONS TEST	
TAP	
	OPERAND
	00240

				TAPE OPERATIONS TEST	,			PAGE	38
LABEL		00200	OPERANO		5	ADDRS	INSTRUCTION		
•			*TEST ADDRESS REGIS	ESS REGISTER AT END OF TRANSFER					
•			WRITE 64 CHARACTER RECORD	RECORD					
•			READ BACK WITH REA	WITH READ TO END OF MEMORY					
	_	20	MONITR		7	04140	J 01841		
		. 40	91		~	04147	J 07045		
	_	DCW	-ALTBIT	ALT BIT PATTERN 64 CHARS	S	04158	08688		
	_	80	взе		7	04159	76890 f		
	_	MLNA	COUSS6, RECLEN	SET REC LEN FUR 586 CHARS	12	04166	0 01105 00049	/ 61	
	••	HS	BYPASSEI	ERROR CHECKING HERE	9	04178	. 07651		
	_	æ	RTBGW	READ TO EDM INTO MOD ADDR	7	04184	J 07492		
	-	U	XAREDT, C09465	ADDR REG S/B EQU TO 09465	11	04191	C 00059 01120	0.	
	_	ВE	13.	S/8 EQU TO GMMM 6 1	~	04202	J 04215 S		
ERROR	4.7	MS	ERR47		9	60740	• 00248		
	_	BWL 1	13*	EXPECT WLR	1	04215	R 04228 -		
ERROR	84	N	ERR48		9	04222	• 00249		
	_	BEXI	SE8.38	BRANCH ON ANY IND EXCEPT WLR	1	04228	R 04742 M		
		60	13.		7	04235	J 04248		
ERROR	64	N	ERR49		9	04545	. 00250		
•				9 9 9					
G0210K	-	NOPWM			-	04248	z		
	-	80	DDEVNI	RUUTINE ABOVE 10K IF 7010	_	04249	00001 6		
•				•					

							v	170
				TAPE OPERATIONS TEST			T020 PAGE	39
LABEL		0020	OPERAND		5	ADDRS	INSTRUCTION	
•			*FIRST TEST OF WRI	OF WRITE-READ DATA LINES				
•			CHECK DATA LINES	LINES USED IN TM				
NEXTRI	<u></u>	6 0	MONITR		7	04256	J 01841	•
		80	7	M XUN BUFER W	~	04263	J 07027	
		DCW	TENIS	DATA FIELD IN BUFER	80	04274	08980	
		80	- 3		~	04275	J 07027	
		DCW	TEN2S		20	04286	08700	
		8	ВЅР	NORMAL BACKSPACE	4	04287	76890 F	
		80	ВЅР		~	04294	76890 f	
		80	RT	M XUN BUFER R TEN 1S	~	04301	J 07420	
		ပ	BUFERE9, TEN1S		11	04308	06980 60560 0	
		96	13.		7	04319	J 04332 S	
ERROR	20	MS	ERR 50		9	04326	, 00251	
		80	± ₹	READ TEN 25	~	04 132	J 07470	
		ပ	BUFERE9, TEN2S		7	04339	C 09409 08700	
		8 E	13.		7	04350	J 04363 S	
ERROR	21	3.	ERRSI		9	04351	• 00252	
		1			•			
		80 (MONI IK		~ 1	04363	J 01841	
		∞			_	04370	J 07027	
		M O O	TEN4S		<u>د</u>	04381	08710	
		&	Z		~	04382	J 07027	
		DCM	TENBS		Š	04393	08720	
		80	вѕр		7	04394	7 06894	
		80	вѕр		_	04401	₹6890 f	
		80	2.2	READ TEN 4S	~	04408	J 07420	
		ပ	BUFERE9, TEN4S		11	91550	C 09409 08710	
		8 E	13.		~	04456	J 04439 S	
ERROR	1 52	SH	ERR52		9	04433	, 00253	
		60	٣.	READ TEN BS	1	04439	J 07420	
		U	BUFERE9, TENBS		=	94440	C 09409 08720	
		96	13.		7	15550	J 04470 S	
ERROR	53	S	ERR53		9	79770	. 00254	
•				• • • • • •				

				TAPE OPERATIONS TEST			TOZO PAGE 40
LABEL	J	00240	OPERAND		5	ACORS	INSTRUCTION
•		•	*WRITE & READ THE CO	EAD THE COLLATING SEQUENCE			
•			MOVE & LOAD MODE, EVEN	VEN 6. 000 PARITY			
	a)	~	MONITR		~	04410	J 01841
	a	æ	13	M XUN BUFER W	~	04477	J 07027
	_	DCW	-corsea	COLLATING SEQUENCE	S	04488	08824
	Ð	æ	WTB	M XBN BUFER W	~	04489	J 07045
	J	MOO	-corsea		'n	04500	08824
	J	æ	B SP	BSP OVER BOTH RECS	_	04501	J 06894
	J	8	BSP		~	04508	J 06894
	.	8	RT	M XUN BUFER R	~	04515	J 07420
		U	BUFERE63, COLSEQ	COMPARE DATA	11	04522	C 09463 08824
	.	90	13.	SHOULU NOT BE EQUAL	7	04533	J 04546 /
ERROR	55	A.S	ERR55		•	04540	• 00256
	-	MLCS	COL SEQ-44, BUFER619	BUFERG19 RESTORE S/B CHAR	12	94540	0 08780 09419 3
		U	BUFERE63, COLSEQ	COMPARE DATA	11	04558	C 09463 08824
	_	86	. 13•		~	69540	J 04582 S
ERROR	26	SE	ERR56		9	97540	, 00257
	_	8	878	M XBN BUFER R	~	04582	J 07438
	_	U	BUFERE63, COLSEQ		11	04589	C 09463 08824
	_	96	13.		7	04600	J 04613 S
ERROR	25	X X	ERR57		•	04607	• 00258
					^	04613	19810
	_	o c		Man		04620	J 07081
	-	X 00	-001.560		\$	04631	08824
		6	8 S P		2	04632	7 06894
		9	RTBW	L XBN BUFER R	~	04639	J 07474
		U	BUFER 663, COL SEQ	NO WMS HERE	11	04646	C 09463 08824
		96	13.		~	04657	J 04670 S
ERROR	58	SE	ERR58		9	04664	, 00259
•							

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				TAPE OPERATIONS TEST	ţ	9	T020	PAGE
LABEL		00240	OPERAND		5	ADDKS		_
•			*WRITE MOVE READ LOA	'E MOVE READ LOAD-CHECK FOR WS-WM				
		&	MONITR		~	04950	J 01841	
		.	81.8		1	04677	J 07045	
		DCM	-001869		*	04688	08824	
			ВЅР		_	68950	J 06894	
		N.	BYPASSE1		•	96950	, 07651	
			RIBW		7	04702	J 07474	
		BWL1	13+		1	04109	R 04722 -	
FRROR	56	N.S.	ERR59		9	04716	. 00260	
		8CE	*£7,8UFER£63,	LAST CHAR A BLANK	13	04722	B 04740 09463	£9 4
ERROR	09	S	ERR60		9	04734	, 00261	
		N	COL SEQ-46	SET WM FOR COMPARE	9	04140	, 08778	
		U	BUFERE62, COLSEQ	COMPARE DATA	17	94140	C 09462 08824	824
		8E	13.		~	04757	J 04770 S	
ERROR	61	N.	ERR61		9	04764	• 00262	
		3	COL 5EQ-46	RESTORE TO URIG COND	Ð	04110	a 08778	
		v	ER 815, COL SEQ-48	COMPAKE DATA	==	91150	C 09415 08776	176
		BE	13.		~	04787	J 04800 S	
ERROR	62	MS	ERK62		9	04194	• 00263	
•				* * * * *				

				TAPE OPERATIONS TEST			1020	PAGE	45
LABEL		OPCOD	OPCOD OPERAND		5	ADDRS	INSTRUCTION	N01.	
•			*SET WMS OVER COLLATING SEQUENCE	ITING SEQUENCE					
•			WRITE MOVE-READ LOAD,-TEST	JAD,-TEST FOR WMS					
•			WRITE LOAD-READ LOAD,-TEST	JADTEST FUR WMS					
		82	MONITR		~	04800	J 01841		
		cs	WKAREA	CLEAR OUT WORK AREA	9	04807	/ 00163		
		MLCA	COLSEQ.WKAREA	MOVE COL SEQ TO MOD	12	04813	0 08824	1 69100	
		N	WKAREA-15.WKAREA-31	11 SET WMS	11	04825	. 00148	00132	
		SW	WKAREA-46, WKAREA-47	7 IN RECORD	11	04836	, 00117	91100	
		60	WTB		-	04847	J 07045		
		DCW	-WKAREA	COL SEQ WITH WMS	2	04858	69100		
		83	WTBW		7	04859	J 07081		
		DCW	-WKAREA		2	04870	00163		
		83	вѕр		7	04871	76890 F		
		83	вѕр		7	04878	76890 f		
*		60	RTB		7	04885	J 07438		
		J	BUFERE63, COL SEQ	ND WMS HERE	11	04892	C 09463	08824	
		BE	13.		2	04903	J 04916	S	
ERROR	63	N.	ERR63		9	04910	• 00264		
		62	RTBW		7	04916	J 07474		
		M	• £7,BUFER£17	CHECK FOR WM	12	04923	V 04941	1 11460	
ERROR	49	N.	ERK64		9	04935	• 00265		
		B.W.	• £7.8UFER£32	CHECK FOR WM	12	04941	V 04959	09432 1	
ERROR	99	N	ERR65		9	04953	• 00266		
		10 10	*67, BUFERE48	CHECK FOR WM	12	65650	V 04977	09448 1	
ERROR	99	NS	ERR66		Ş	04971	. 00267		
		3	BUFERG17	CLEAR WM	9	11650	п 09417		
		Č.	BUFER&32,8UFER&48	CLEAR WMS	11	04983	a 09432	09448	
		ပ	BUFER 663, COL SEQ	COMPARE DATA	11	76670	C 09463	08824	
		8 E	23.		7	90050	J 05018	S	
ERROR	19	N.	ERK67		9	21050	• 00268		
•				在在日本					

						•	•
				TAPE OPERATIONS TEST		PAGE	43
LABEL		00740	OPERAND		CT ADDRS	S INSTRUCTION	
•			*CHECK OPERATION OF 1	1 ST CHAR. LATCH			
•			READ RECORD 1 ST CH	CHAR TAPE MARK			
		d			7 05018	1861	
		o a		3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		7	
		מ	W L	TM. THEN 9	5 05036	ŏ	
		. 60			7 05037		
		N.	15561	DO ERROR CHECKING HERE	6 05044	4 , 07651	
		60		M XUN BUFER R	7 05050	0 J 07420	
		8EF1	13*	SHOULD GET EOF IND	7 05057	7 R 05070 B	
ERROR	70	MS	ERK70		49050 9	4 • 00271	
		BEX1) M+83+	CHECK FOR DC AND WLR	7 05070	O R 05084 M	
		8	13*		7 05077	06050 r 1	
ERROR	11	NS.	ERR71		6 05084	14 , 00272	
		U	69, CHR 1TM	ALL CHARS S/B XFERRD	11 05090	0 C 09409 08730	
		8 E	13*	REC READ EQUALS DATA	1 05101	11 J 05114 S	
ERROR	72	NS	ERR72		6 05108	N . 00273	
•			READ RECORD 1ST CHAN	CHAR 7.REST TMS			
		80	MONITR		7 05114	4 J 01841	
		89	3		7 05121	11 J 07027	
		DCW	UTS	A 7 AND 9 TMS	5 05132	12 08740	
		60	ВЅР		7 05133	13 J 06894	
		N S	BYPASSE1	DO ERROR CHECKING HERE	6 05140	0 0 07651	
		80	RT		7 05146	6 J 07420	
		BEF1	83*	SHOULD NOT GET EOF	7 05153	53 R 05167 B	
		æ	23.		7 05160	50 J 05173	
ERROR	73	N	ERR73		6 05167	51 , 00274	
		8EX1	H*83*	CHECK FOR DC AND WLR	7 05173	73 R 05187 M	
		8	13.		7 05180	30 J 05193	
ERROR	74	MS	ERR 74		6 05187	37 , 00275	
		ں	BUFER 69, SQRUTS		11 05193	93 C 09409 08740	
		9E	130		7 05204	34 J 05217 S	
ERROR	75	3K	ERR75		6 05211	11 , 00276	
•				电磁管电容			

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LABEL	•	00240	OPERAND	TAPE OPERATIONS TEST	5	ADDRS	TO20 Instruction	PAGE	*
• •			*TEST FOR ERASE FI BACKSPACE AFTER	ERASE FÜRWARD DURING AFTER WRITE STATUS					
		80	MONITR		~	05217	J 01841		
		œ			7	05224	J 07027		
		DCW	TENIS		'n	05235	06980		
	ပ	20	WIBEN	DO A WRITE TO E O M	7	05236	66010 f		
		DCW	CCOLSEQ	COLLATING SEQUENCE	ĸΩ	05247	08824		
		60	BSP	BSP OVER BOTH RECS	1	05248	3 06894		
		æ	9.SP		1	05255	J 06894		
		æ	=		1	05262	J 07027		
		DCW	TEN2S		50	05273	00100		
		8	BSP		1	05274	76890 F		
		8	R		1	05281	J 07420		
		U	BUFEKE9, TEN2S	CHECK RECORD	11	05288	C 09409 08700	00	
		8 E	13.		4	05299	J 05312 S		
ERROR	16	NS.	ERR76		9	90830	. 00277		
		MLNA	C 00586, RECL EN	SET REC LEN FOR 586 CHAKS	12	05312	D 01105 00049	/ 64	
		MS	BYPASSEI	DO ERROR CHECKING MERE	•	05324	, 07651		
		60	RT6			05330	J 07438		
		U	BUFERE9, LABEL	CHK ON 1ST 10 CHARS	1.1	05337	6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	66	
		BU	13.	SHOULD NOT BE EQUAL	7	05348	J 05361 /		
ERROR	11	N	ERR 77		9	05355	• 00278		
•				****					
•			WT-WTB-BSP-BSP	RE WI-BSP-RI-RIB					
•			OK 1 ST PORTION	OF 2 ND RECORD GONE					

			TAPE OFERATIONS TEST			1020	PAGE	45
LABEL	00240	OPERAND		5	ADDRS	INSTRUCTION	NOI	
•		TEST FOR 8-REG BIT	BIT PICK UP					
•			DROP OUT					
•		WRITE ODD-READ EVEN-	N- TEST FOR +S					
	60	MONITR		-	05361	J 01841		
	•	REC	REWIND	1	05368	J 06875		
	s	RECNO	ZERU COUNTER	9	05375	\$ 09393		
WIBPUR	∢	ONE, RECNO	ADD ANOTHER	11	05381	A 08681	09393	
	60	W T B		-	05392	J 07045		
	DCW	EALTBIT	ALTERNATE BIT PATTERN	2	05403	98880		
	BCE	WTBPUR, RECNO-3,0	1000 RECORDS	12	05404	8 05381	0 06860	
	ď	C 32		_	05416	J 06875		
	, v	BPUCNT	ZERO COUNT	ø	05423	5 01172		
	cs	WKAREA	CLEAR DUT WORK AREA	9	05429	/ 00163		
	NS	WKAREA-63	SET WM TO STOP MOVE	ø	05435	00100		
	MLCS	CHCONE7, WKAREA	MOVE * TO WORK AREA	12	05441	0 01515	00163 3	
	MLCB	WKAREA, WKAREA-1	EXPAND TO 64 +S	12	05453	D 00163	00162 L	
	Z C	PICKOCEI	SET START ADDR	9	05465	n 08670		
	SAR	SXR3	IN INDEX REGISTER	7	05471	5 00064	⋖	
ZEROIT	s	0 £ S x R 3	ZERO COUNTERS	9	05478	00°00 S		
	SAR	SXK3	SAVE ADDR FOR NEXT 1	7	05484	6 00064	<	
	S	TWO.SXR3	SUBTRACT 2 FROM INDEX REG	Ξ	05491		79000	
	B.W.	ZEROIT, 165XR3	NO MORE WM NO MORE TABLE	12	05502	V 05478	00:01	
	s	RECNT1	ZERO RECORD COUNTER	9	05514	\$ 01153		
ROBPUR	BCE	REPORT, RECNT1-3,1	READ THEM ALL	12	05520	B 06126	1 05110	
	N	BYPASSE1	CHECKING DONE HERE	9	05532	15910		
	83	RT	READ RECURD	~	05538	J 07420		
	∢	ONE, RECNT1	COUNT RECORDS READ	11	05545	A 08681	01153	
	BEX1	1,83.	ANY OTHER IND SET	7	05556	R 05570	_	
	80	CK4AST	GO ON CHK FOR . S	7	05563	96550 f		
ERROR 80	3.	ERK 80		9	02520	• 00281		
	N.S.	CK4LUP&1	DO NOT LOOP HERE	9	05576	• 01870		
	83	MONITR		~	05582	J 01841		
	80	ROBPUR	SKIP CHKS IF IND SET	~	05589	J 05520		

			TAPE OPERATIONS TEST			1020	PAGE	4
LABEL	00240	OPERANO		5	AOURS	INSTRUCTION		
•		CHECK BUFER SECTION BY SECTION	N BY SECTION					
CK4AST	NS	BUFER1, BUFER9	STARI & STOP WM MOVE	11	05596	. 09410 09922	~	
	MLWB	BUFER9, BUFERB	MOVE WM THRU BUFER	12	05607	0 09922 09858	¥ 60	
	MS	BUFRNO&1	SET UPPER LIMIT	•	61950	98660 •		
	SAR	SXR3	IN INDEX REGISTER	-	05625	G 00064 A		
CK4MOR	ပ	SXR3,C09410	CHK FOR END OF FIELD	11	05632	C 00064 01110	0	
,	84	ROBPUR	READ NEXT RECORD	7	05643	J 05520 U		
	ပ	O & SXR3, WKAREA	FIELDS OF . S	11	05950	C 00.00 00163	3	
	SAR	SXR3	SAVE ADURESS	1	05661	G 00064 A		
	9 E	CK4MOR	CHECK FOR END OF REC	_	05668	J 05632 S		
•		FINO CHARACTERS INVOLVED	VOLVED					
	MLNB	SXR3, HOLOIT	SAVE ADDRESS	12	05675	0 00064 01162	7 ~	
	NS	ALTBITE1	SET ADDR OF PATTERN	•	05687	• 08889		,
	SAR	SXR4	IN INDEX REGISTER	7	05693	₩ 69000 9		
	⋖	C00064, SXR3	A00 TO A0DRESS	11	05700	A 01100 00064	•	
NDOSEC	ပ	SXR3, HOLOIT	CHK FOR END OF SECT	==	05711	C 00064 01162	~	
	9E	CK4MOR	RESUME CHK BY SECT	7	05722	J 05632 S		
SCNFLO	SCNLS	0£5XR3,0£5XR4	SCAN FIELDS	12	05129	0 00.00 00.00	3	
	SAR	SXR3 .	CHAR IN BUFER	1	05741	G 00064 A		
	SBR	SXR4	CHAR IN ALTBIT PATRN	~	05748	8 69000 9		
	BCE	NDUSEC, 165XR3, *	CONTINUE CHK IF *	12	05755	8 05711 00.01		
	∢	ONE, BPUCNT	COUNT EACH ERROR	11	19150	A 08681 01172	~	
	BCE	TOMANY, BPUCNT-4, 1	MORE THAN 9999	12	05778	8 06107 01168	8 1	

						-	349
0	OPERAND	TAPE OPERATIONS TEST	5	ADDRS	TO20 INSTRUCTION	PAGE LION	7-4
<	ANALYZE BITS PICKE	TS PICKED UP OR DROPPED					
	HAFWAYE1.PICKUPE1	SET SWITCHES	11	05790	E 05883	05955	
	ERRCNI	ZERO COUNTER	•	05801	\$ 08670		
	P ICKOBE1	SET ADDR FOR START	•	05807	• 08664		
	SXKA	OF TALLEY TABLE	7	05813	6 00074	<	
	1 ESXR4	NEED IT FOR LOOK UP	•	05820	. 00. *1		
	1 ESXR4, BITABL	FIND CHAR WRITTEN	12	05826	1 00, #1	06106 2	
	SXRB		_	05838	6 000 19	60	
	1 £ 5 x R 4		9	05845	n 00.#1		
	OESXRB, BITCHKE11	MOVE BIT FOR TESTING	12	05851	0 CO. HO	05881 3	
	SXRB		~	05863	6 000 19		
	PICKUP, 1ESXR3,	TEST BITS IN CHAR RD	12	05870	H 05954	00.01	
			1	05882	z		
	ADDONE, 165XRB, M		12	05883	W 05462) I	
	CHKONC, OESXRB,		12	05895	V 05991		
	B I TCHK, SXRA	SUB 6,STEP TO NEXT TALLEY	=======================================	10650	\$ 05870	52000	
	SXRA, HAFDUN	1/2 WAY THRU TABLE	=	05918	C 000 14	19110	
	MOVBIT	CONT PICKUP TEST	7	05929	J 05851		
	HAFWAYE1, PICKUPE1	SET FOR UROPOUT TEST	=	05936	• 05883	05955	
	CHK4MM		7	14650	3 05895		
			-	05954	z		
	CHK4MM	TEST FOR LAST PLACE	-	05955	3 05895		
	ONE, OESXRA	ADD 1 TO TALLEY	11	05962	A 08681	00.00	
	ONE, ERRCNT	ADD 1 TO ERROR COUNT	11	05973	A 08681	08670	
	CHK4WM	TEST FOR LAST PLACE	7	05984	36850 f		

			TAPE DPERATIONS TEST			TO20 PAGE	84
LABEL	OPCOD	OPERAND		CT AD	ADDRS	INSTRUCTION	
CHKDNC	BBE	NDOSEC, ERRCNT, 1		12 05	16650	W 05711 08670 1	
	BCE	LOSTAC, 085XRB, C	LOST A C BIT	12 06	€0090	9 06033 00.HO C	
	⋖	ONE, PICKOC	PICK UP A C BIT	11 06	06015	A 08681 08669	
	80	NDOSEC	LOOK FOR MORE +S	7 06	92090	J 05711	
LOSTAC	Ø	DNE, DRUPUC	DROPPED A C BIT	11 06	06033	A 08681 08627	
	80	NDOSEC	LODK FOR MORE #S	90 1		J 05711	
	DCW	ac 4 8 12 8ua	CHAR HAS - HAS NOT	14 06	99090		
		a 28_148.a		14 06	82090		
		a 1 4 B 2 8 - Va		14 06	26090		
BITABL	DCW	ac12 8 - 4 8 \$a		14 06	90190	-	
TOMANY	SE	ERK81		90 9	06107	, 00282	
	N N	CK4LUPE1	DO NOT LODP HERE	90 9	61130	, 01870	
	60	MDNITA		1 06	61190	J 01841	
REPORT	×S	PICKOCEI	SET START FOR MUVE	90 9	06126	, 08670	
	SAR	SXR3	IN INDEX REGISTER	7 06	06132	G 00064 A	
NXTOTL	MLCB	OESXR3, BITALY	SET UP FOR TYPE DUT	12 06	06139	D 00,00 06190 L	
	SAR	S X R 3	SAVE ADDR FDR NEXT 1	1 06	15190	G 00064 A	
	U	BITALY, COUNTO	CHECK FDR ZERD COUNT	11 06	06158	C 06190 08754	
	8 E	DDNTYP	DDNT TYPE DUT	7 06	69190	J 06192 S	
	60	TYPEIT		40 7	91190	J 09344	
	DCM	(B)		2 06	98190		
BITALY	DCM	9 6 6	TALLEY FOR TYPE OUT	90 9	06190		
DONTYP	B	NXTOTL, 165XR3	PICK UP NEXT TALLEY	12 06	26190	V 06139 00,01 1	
•			***				

			TABE DOEDATIONS TEST			T020 PAGE 49	
LABEL	0PC 00	OPERAND		7	ADURS	RUCTION	
		,					
•			LECORDS				
•		ALTERNATE BIT PATTERNS	RNS				
•		RIPPLE WRITE TRIGG	E TRIGGER FREQUENCY TEST		*		
,	60	MONITR		1	06204	J 01841	
	€	RED	REWIND	1	06211	J 06875	
	v	RECNO	ZERO RECORD COUNT	•	06218	S 09393	
NXTREC	⋖	ONE, RECNO	SET CNT IN REC LABEL	11	06224	A 08681 09393	
	60	× 18	M XBN BUFER W	7	06235	J 07045	
	DCM	EALTBIT	ALT BIT PATTERN	S	94290	0.8888	
	BCE	NXTREC, RECNO-2,0	100 RECORDS	12	06247	B 06224 09391 0	
	8	SKP	TO SKIP/GRASE RUUTINE	1	06259	J 06932	
RECYCL	S	FREGIEI	SET STARF ADDR IN XR	9	99290	• 01230	
	SAR	SXK4	TO MOD MOVE ADUR	7	06272	G 00069 A	
HTMORE	MLCB	OESXR4, TSTPAT		12	06279	D 00:+0 06320 L	
	SAR	SXR4	SAVE STOP ADDR	7	16790	€ 00069 A	
	Ø	ONE, RECNO		11	06298	A 08681 09393	
	8	30 13		~	60890	J 07045	
TSTPAT	DCM	CHIFIPI	WRITE TRIGGER FREQ	3	06320	25690	
	3	WIMORE, 165XR4	CONT TO NEXT PATRN	12	06321	v 06279 00.*1 1	
	BCE	RECYCL, RECNO-3,0	1000 RECURDS	12	06333	B 06266 09390 0	
	Œ	O.B.	REWIND	1	06345	J 06875	
	S	RECNII	ZERO RECURD COUNT	૭	06352	\$ 01153	
ROMORE	BCE	RDUONE, RECNT1-3,1	1000 RECURDS	12	0635B	B 06554 01150 1	
	MLNB	BUFER £3, SAVEIT	SAVE RECURD NUMBER	12	06370	n 09403 01176 J	
	=	R 15	A NICE AND A NICE AND	~	286 90	J 07434	
	⋖	ONL , RECNII	COUNT RECORDS	Ξ	688.90	A ORGHI 01153	
	U	BUFER&34RECNT1	CHK ON REC NUMBER	1	00490	C 09403 01153	
	96	ROMORE	READ THE NEXT REC	-	11790	J 06358 S	
	U	BUFERC3.SAVEIT	SAME RECNO AS LAST 1	11	06418	C 09403 01176	
	90	СКАНЕО	CHECK FOR HIGHER NO	7	06429	J 06462 /	
ERROR 82	N S	ERR82		9	06436	• 00283	
	3S	CK4LUP61	DO NOT LUOP HERE	•	06442	. 01870	
	60	MONITR		1	06448	J 01841	

			TAPE OPERATIONS TEST			T020 PA	PAGE 50	0
LABEL	00240	OPCOD OPERANO		13	AOORS	ADDRS INSTRUCTION		
	60	RDMORE	CONTINUE READING	~	06455	J 06358		
CKAHED	v	RECNIZ	ZERO COUNTER	•	06462	S 01157		
UPONE	⋖	ONE, RECNT1	UP COUNT BY ONE	11	99490	A 08681 01153		
	⋖	ONE, RECNT2	LOUK FOR LABEL	=	06479	A 08681 01157		
	Ų	BUFERE3, RECNT1	CHK ON REC NUMBER	11	06490	C 09403 01153		
	9 E	001560	OUT OF SEQUENCE	~	10590	J 06522 S		
	8.2	NOHERE	BEEN THRU ALL 1000	~	90590	J 06548 V		
	60	UPONE	TRY AGAIN	~	91590	06515 J 06468		
OUTSEQ	N.S.	ERRB3		9	06522	• 00284		
	MS.	CK4LUPE1	DU NUT LOUP HERE	9	06528	, 01870		
	so.	MONITR		~	06534	J 01841		
	80	ROMORE	READ AGAIN	~	06541	J 06358		
NOHERE	SW	ERR84		•	06548	, 00285		
RODONE	æ	MONITR		-	06554	06554 J 01841		
•								

							Ω	_
		1	TAPE OPERATIONS TEST			1020	PAGE 51	
LABEL	00000	OPERAND		C 1	ADDRS	INSTRUCTION	Z	
•		END OF PROGRAM PASS ON ONE	ON ONE DRIVE					
•		GO TO CHECK FOR NEXT DRIVE	DRIVE ON CHAN					
	ထ	TYPEIT		•	19590	J 09344		
	DCM	aPASSa, G P.	PASS COMPLETE 1 T D	4	06571		c	
	MLNS	UNITNO, ROYTOSETDIND MOVE TO NO TO TABLE	MOVE TO NO TO TABLE	12	06573	0 01737 00	1 0/400	
	⋖	ONE, TOIND A	ADD 1 TO 181 LOC CTR	11	06585	A 08681 OC	68000	
	80	NEXTOR TI	TRY NEXT DRIVE	7	96590	J 01696		
CK4E0J	80	TYPEIT	ONE COMPLETE PASS	~	06603	J 09344		
	0CX	aecola, c	-ALL RDY TDS,ALL CHS	С	06612			
	3	STARIE1 SI	SET RESTART ADDRESS	9	06614	10020 B		
	SAR	SXR2 II	IN INDEX REGISTER	7	08990	G 00034 A		
	BCE	REPEAT, TAD3, 1 R	REPEAT WHOLE TEST	15	06627	B 02008 01	01003 1	
	60	LOADER GI	GO GET NEXT PROGRAM	~	66990	J 00400		
•		•						
	* * * * * * *	电电池电话 医电子						
•		*REWIND ALL DRIVES US	USED ON A CHANNEL					0.20
FSTRWD	3	FSTRWDE8 SI	SET ADDRESS	9	95990	n 06654		
	SAR	SXK2	IN MONITR XR	~	06652	G 00034 A		
	S	TOIND	ZERO ID IND COUNTER	9	65990	8 000 S		
NEXTU	MLNS	RUYTOSETOINO, RWOTOSE3	3 SELECT NEXT DRIVE	12	99990	0 00H/0 0	06769 1	
	BCE	CKCHNS, RDY IDSEIDIND, O	O LAST TO UN CHAN	1.2	11990	8 01535 OC	0 0/400	
	⋖	ONE, TOIND A	ADD TO COUNT	11	68990	A 08681 00	68000	
	MLCS	COLSEQ-15,RWDTDS&4 R	REWIND AND UNLOAD	12	06700	D 0880-9 06	06770 3	
	BCE	*£13,TAD6,1 S	SET FOR REWIND AND UNLOAD	12	21190	B 06736 01	01000	
	MLCS	COLSEQ-19, RWDTDSE4 R	REWINDS ONLY	12	06724	0 08805 0	06770 3	
	SK	RWDSW0£1 R	RETURN TO FAST RWD	9	06736	. 08314		
	MLCB	WHAT WHAT -1 8	BLANK FOR U.C. OP	12	06742	0 08245 0	08241 L	
	MLCA	RWDTDSE4, WHAT-6	SET INST IN MESGE	12	06754	0 06770 0	08236 T	
RWDTDS	RHO	10 R	REWIND ALL DRIVES TESTED	2	99190	% 00% O		
	BNR1	TSTIND	LOOK FOR NOT READY	7	06771	R 07931 1		
	8A1	•-18		~	82190	R 06766 M		
	83	NEXTO G	GO GET NEXT ONE	~	06785	59990 f		

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LABEL	00240	OPERAND	TAPE OPERATIONS TEST	5	ADDRS	TO20 INSTRUCTION	PAGE	25
•		*SPACE, DELAY AND TEST FOR T.I. ON	EST FOR T.I. ON					
SPACE	SBR	RETURN		~	26190	06192 G 00039 B		
	. 0 .	£01,4	SPACE OVER T.M.	ï	66190	U WUI A		
	8EX1	8,83.	BRANCH ON 1/4/8/A/B	_	06804	R 06818 B		
	BAI	*-18	TRY AGAIN IF BUSY	7	11890	R 06799 M		
	N	TISW	SET SHITCHS TO	9	06818	• 01192		
	Š		EXPECT II ON	-	06824			
	s	DLACNT	ZERO 6 POS FIELD	9	06825	\$ 01184		
	4	TIME1, DLACNT	ADD LOOP TIME TO CNI	11	16830	A 01178 D1184	94	
	811	* 620	II ON -OK, LEAVE	1	06842	J 06868 K		
	BCE	*-29, DLACNT-5,0	ALLOW UP TO 1 SECOND	12	65890	8 06831 01179 0	0 62	
	3	TISW	NO TI ON, LEAVE	•	19890	n 01192		
	MS			-4	19890	•		
	80	OERETURN	RETURN TO MAIN LINE	_	06868	06868 J 000MO		
•			****					

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			TAPE OPERATIONS TEST		-	1020	PAGE	5
LABEL	00000	OPERAND		CT AU	AUDRS I	INSTRUCTION		
•		ALTER U.C. INSTRU	. INSTRUCTION IN OTICITY					
•		U.C. ROUTINE TO I	U.C. ROUTINE TO INSTRUCTION REQUESTED					
ć.	6		Neilage and Suppose Herra	7	7 36 8 7 8 7	8000		
	ć 0 a		STOR SOUTH OF THE STORY OF THE					
	3							
	5	9 V T O 4 O 6						
нSР	SBR	RETURN		1 06	06894 6	8 68000		
*	80	UCONRT		7 06	0690i	15690		
	MOQ	aU&U18a	NORMAL BACK SPACE	5 06	06912			
Z Z	SBR	RETURN		,90 L	5 61690	00039 8		
-y	60	UCONRT		7 06	06920 J	15690		
	DCW	อหากรกอ		,90 5	18690			
SKP	SBR	REIURN	STORE ADDRESS FUR RETURN	90 1	06932 6	8 6£000		
	sc.	UCCNRT		30 1	06939 J	15690		
	MOO	auxulea		\$ 06,	04690			
*		*UNIT CONTROL ROUTINE	INE					
UCONRT	SBR	SXR3	STORE OP REQUESTED	7 06	06951 6	00064 B		
	MLCWB	4ESXR3,UCONOPE4	SET OP REG IN PLACE	12 06	06958 0	47690 40:00	2	
UCDNOP	8SP	11	U.C. INST- VARIABLE	5 06	U 07690	4 01 8		
	MLCB	WHAT . WHAT-1	BLANK FIELD	12 06	0 67690	08242 08241	1 1	
	MLCA	UCCNOPE4, WHAT-6	SET INST IN ERR MSGE	12 06	0 6987 0	06974 08236	1 9	
	83	151401	GO SEE ABOUT OVERLAP	,90 %	f 66690	07862		
	8EX1	# £89#	BRANCH ON 1/4/8/A/B	7 070	07006 R	07020 B		
	BA1	UCONOP	TRY AGAIN IF BUSY	7 07(07013 R	02690		
	œ	MERGE	CONT IN COMMON RI	7 070	07070	07630		

			TAPE OPERATIONS TEST			1020	PAGE	5.
LABEL	00540	DPERANO		5	ADDRS	INSTRUCTION		
•		ALTER WRITE INSTRUCTION IN UTILITY	UCTION IN UTILITY					
•		WRITE ROUTINE TO	WRITE ROUTINE TO INSTRUCTION REQUESTED					
I I	SBR	DATA	LOC OF WRITE FIELD	7	07027	6 00044 8		
	80	SETOP	RT TO SET UP OP REQ	7	07034	J 07142		
	DCM	OMECIO.		4	07044			
W.T.B	SBR	DATA		^	07045	6 00044 8		
	80	SETOP		1	07052	J 07142		
	DCM	ens819		*	07062			
Z Z	SBR	DATA	LOC OF WRITE FIELD	1	07063	6 00044 8		
	80	SE 10P		~	07070	J 07142		
	РСМ	ernia		•	01080			
WTBW	SBR	DATA		7	07081	G 00044 B		
	60	SE TOP		~	07088	J 07142		
	NOO	alabla		4	04020			
WTBEW	SBR	OATA		7	01099	G 00044 B		
	MLCS	COL SEQ-12, WRITE 69	SET D-HOD TO X	12	90110	0 08812 07372	2 3	
WTEOSW	NOP		OVRLAP ON 7010 ONLY		07118	z		
	MLCS	CHCON-4ECHSTCT, WTEOP-2	EOP-2 SET FOR UN-OL	12	07119	0 01EH4 07139	6 3	
	æ	SE10P		1	07131	J 07142	٠	
MTEOP	DCM	erasie		4	07141			
SETOP	SBR	SXR3	STORE ADDR OF OP REQ	-	07142	G 00064 B		
	MLCA	3ESXR3, WRITEE3	SET OP REQ IN PLACE	12	65110	0 00,03 07366	1 9	
	35	6 EDATA	ESTABLISH RETURN ADD	•9	07161	90±00 n		
	SAR	RETURN	STORE IN COMMON EXIT	7	19110	G 00039 A		

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S RECLEN COMPLETELY HUNA COODIGNECLEN SET REC LEN FOR 10 CHARS 12 07180 9 01095 00049 BZN SETEMO,440014A, NO ZUNELOCHAR SCELEN CONTROL CHARS 12 07180 9 01095 00049 HUNA COODIGNECLEN RECORD LENGTH 44 CTS 12 07180 9 01095 00049 BZN SETEMO,440014A, NO ZUNELOCHAR RECC 12 07181 9 07104 0 01095 BZN SETEMO,440014A, SET REC LEN FOR 586 CHARS 12 07284 9 01109 00049 B CLEAR BUFFR-SET GWH AT END 7 07240 9 01109 00049 SW ALDEL,440014A, SET REC LEN FOR 586 CHARS 12 07284 9 01109 00049 BZN ALDEL,440014A, SET DATA IN BUFFR 11 07274 9 01000 91729 CM ALON SETEMO,450014A, SET DATA IN BUFFR 11 07274 9 09404 07275 CM ALON RECLEN,LENGTH SET DATA IN BUFFR 12 07284 9 09404 07407 CM NOP HIN SET RECURE LENGTH LILL UP IN JERK 12 07391 9 09409 09409 CM BRITHM TO WRITE ROUTINE 11 07344 1	LABEL	OPCOD	OPERAND	TAPE OPERATIONS TEST	13	ADDRS	PAGE
S RECLEN ZERO RECLEN COUNI 6 7174 S 000049 HUNA COODIO,RECLEN SET RECLEN FOR 10 CHARS 12 07180 0 01095 00049 BLN SETEND,4LDATA, ND JUNE,10 CHAR MEC 12 07712 V 07240 001095 00049 MLNA COODGA, RECLEN RECORD LENGIN 46 CHS 12 07724 V 07240 00100 00049 MLNA COOSGA, RECLEN RECORD LENGINGH 46 CHS 12 07724 D 01000 00049 BN CLEAR CLEAR BUFER-SET CHMM AT END 17 07240 J 07225 D 01000 001049 BN ALABEL,*COATA**E DAT ADD MORER AT IN BUFER 12 07724 J 07325 C 07000 07100 07100 07100 07100 07100 07100 07100 07100 07100 07100 07100 07100 07100 07100 07100 07100 07100 07100 07100 <t< th=""><th>•</th><th></th><th>FOR LABEL.</th><th>FILL BUFER COMPLETELY</th><th></th><th></th><th></th></t<>	•		FOR LABEL.	FILL BUFER COMPLETELY			
HIVA CO0010, RECLEN SET REC LEN FOR 10 CHARS 12 07196 0 10095 000049		v	RECLEN	ZERO RECLEN COUNI	ø	91116	
BAN SETEND, 44.0014. NO ZOME, 10 CHAR REC 12 07192 V 07240 00049		MLNA	C00010, RECLEN	SET REC LEN FOR 10 CHARS	12	07180	01095 00049
HINA CO0064,RECLEN RECORD LENGTH 64 CHS 12 07204 0 0100 000049		N78	SETEND, 4LDATA,	NO ZONE 10 CHAR REC	12	07192	07240 00104
HUNA CO0986,RECLEN SET REC LEN FON SOL CHARS 12 07268 0 1010 0 0004-3		MLNA	C 00064, RECLEN	RECORD LENGTH 64 CHS	12	07204	00110
HANA C.00586,RECLEN SET REC LEN FOR S86 CHAMS 12 07268 0 10105 00045		NZ 9	SETEND, 4EDATA, B	ZONE64 CHAR ONLY	12	07216	07240 00404
B CLEAR CLEAR BUFER-SET GHMM AT END 7 07240 J 07825 SM GUFER, BUFER, BUFERS SET MMS FOR MUVE 11 0724 r v9400 0/922 MLMA 46DATA, e.64 PUT ADDR OF DATA IN LL 0728 r v9400 0/922 MLCMB 000006, BUFER-LERECLEN SET DATA LOC G.VSE LABEL 12 0728 v 07307 07007 07107 CM UMFER DATA LOC G.VSE LABEL 12 07294 1 07204 07		MLNA	C00586, RECLEN	SET REC LEN FOR 586 CHAKS	12	07228	01105 00049
SW GUFER, UDEER, OUEER SET HMS FUR HOVE 11 07247 , 04400 09922 HLNA 4 GDAIA,*66 PUT ADDR OF DATA IN BUFER 12 07258 D 0404 07275 HLNA 4 GDAIA,*66 PUT ADDR OF DATA IN BUFER 12 07270 D 00000 09129 BZN ALABEL,*60ATA,£ DATA LOC £, USE LABEL 12 07270 D 00000 09129 CW BUFER NO MH IN 1ST LOC 6 07294 D 04000 09129 CW BUFER NO MH IN 1ST LOC 6 07294 D 04040 09734 CHANA RECLEN, LENGTH SET RECORD LEN IN LOFER 12 0734 D 04940 09409 MLCA LABEL, BUFERS MOVE LABEL IO BUFER 12 0734 N A C NOPH MLCA BPRIME, WRITE BOUTINE ALCAR SM 1 07344 N MCA BPRIME, WRITE BOUTINE ALCAR SM N N A A A A A A A A A A A	SETEND	60	CLEAR	CLEAR BUFER-SET GMWM AT END	~	07240	
HLNA 4.60ATA, *66 PUT ADDR OF DATA IN BUFER HLNA 6.0000, BUFER-ICRECLEN SET DATA IN BUFER BZN ALABEL, 4.60ATA, 6 DATA LOC 6, USE LABEL CW BUFER NO WINTER NOUTINE HLCA LABEL, BUFERCE NOVE LABEL TO BUFER NOPH HLCA LABEL, BUFERC NOVE LABEL TO BUFER NOPH HLCA BPRIME, HRITE & SET NEW WRITE ADDR HLCA BPRIME, HRITE & BANDE NO HAITE ADDR HLCA BPRIME NO HAITE ADDR HAITE ADDR HLCA BPRIME NO HAITE ADDR HAITE ADDR HLCA BPRIME NO HAITE ADDR HAITE NO HAITE ADDR HLCA BPRIME NO HAITE ADDR HAITE NO HAITE HAITE NO HAITE N		MS	BUFER, BUFER 9	SET WMS FUR MUVE	11	01241	00%0
MLCMB 000000,8UFER-LERECLEN SET DATA IN BUFER 12 07278 0 00000 09179		MLNA	4 EDATA, # E6	PUT AUDR OF DATA IN	12	07258	00100
SZER		MLCWB	00000, BUFER-1 EREC	LEN SET DATA IN BUFER	12	01210	62160 00000
CW BUFER NO WM IN IST LOC 6 07294 B 09400 B SPRIMW TO WRITE ROUTINE 7 07307 J 07344 MLCMB BUFER-1CRECLEN, BUFER 9-1 FILL UP BUFER 12 07319 D 091729 C MLCA LABEL, BUFER 69 MOVE LABEL TO BUFER 12 07331 D 09399 C NOPW MCA SET NEW WRITE ADDR 1 07345 N MLCA BPRIME, WRITE 68 SET NEW WRITE ADDR 12 07345 N MLCA BPRIME, WRITE 68 SET NEW WRITE ADDR 12 07345 N MLCA BPRIME, WRITE 69 SET NEW WRITE ADDR 12 07345 N 07345 MLCA BPRIME, WRITE 69 MALL XXN BUFER W, U/B 6 07345 N 07345 MLCA WRITE 69, WHAT-1 MOVE 10 OF X-FER 7 07345 D 07345 BEX1 *CB+B BRANCH ON 1/4/B/A/B 7 07405 D		N78	ALABEL, 460ATA, 6	DATA LOC 6, USE LABEL	12	07282	07307 00404
B SPRIMW TO WRITE ROUTINE 7 07304 J 07344 MLCMB BUECK-1CKECLEN, BUFERO-1 FILL UP HUFEK 12 07319 D 097129 C MLNA RECLEN, LENGTH SET RECORD LEN IN LABEL 12 07319 D 097129 C MLCA LABEL, BUFERES MOVE LABEL TO BUFER 12 07331 D 09399 C NOP MLCA BPRIME, MRITE ROUTINE LORANDR 1 07343 N MLCA BPRIME, MRITE ROUTINE ML XXN BUFER M, U/B 12 07345 N ML 11, BUFER ML XXN BUFER M, U/B 10 07345 N 07345 MF 11, BUFER ML XXN BUFER M, U/B 10 07345 N 07345 MCA MRITESO, MHAT-1 MOVE INST TO ERR MSG 12 07345 N 07345 BEXI *E8, B BRANCH ON 1/4/8/A/B 7 07399 R 07413 076053 BAI WRITE MRITE CONT IN COMMON RT 7 07413<		X	BUFER	NO WM IN IST LOC	9	07294	
MLCMB BUFER-ICRECIEN, BUFER -1 FILL UP BUFER 12 07307 D 09729 C MLNA RECLEN, LENGTH SET RECURD LEN IN LABEL 12 07319 D 09499 C MLCA LABEL, BUFERE9 MOVE LABEL TO BUFER 1 07343 D 09499 C NOPH MLCA BPRINE, WRITE ROUTINE SET NEW WRITE ADDR 1 07343 N 09499 MLCA BPRINE, WRITE ROUTINE ALCAR SW MILCAR SW 1 07345 N X 1 07345 N 1		80	SPRIMW	TO WRITE ROUTINE	7	01300	
C MLNA RECLEN, LENGTH SET RECORD LEN IN LABEL 12 07319 0 00049 or Move Label 10 bufer 12 07331 0 09399 or Move Label 10 bufer 12 07331 0 09399 or Move Label 10 bufer 12 07331 0 09399 or Move Label 10 bufer 12 07343 N	ALABEL	MLCWB	BUFER-1CRECLEN, BU	FER9-1 FILL UP BUFER	12	01301	67160
MLCA LABEL, BUFERE9 MOVE LABEL TO BUFER 12 0/331 0 094999		MLNA	RECLEN, LENGTH	SET RECURD LEN IN LABEL	12	07319	000040
c NOPWA 1 07344 N d NOPWA 1 07344 N d NOPWA 1 07344 N d MLCA BPRIME, MRITE & SM 12 07345 D 01125 CW BPRIME CLEAR SW 6 07357 D 07345 WI 11, BUFER M/L XXN BUFER W, U/B 10 07357 D 07345 SBR XAREOT B-REG, END UF X-FER 7 07373 G 00059 MLCA WRITE E9, WHAT-1 MOVE INST TO ERR MSG 12 07392 J 07392 J 07392 J 07392 J 07493 R 07413 BEXI *E8, B IRY AGAIN IF BUSY 7 07499 R 07413 J 07430 J 07433 J 07433 <td></td> <td>MLCA</td> <td>LABEL, BUFER 69</td> <td>MOVE LABEL TO BUFER</td> <td>12</td> <td>07331</td> <td>66860</td>		MLCA	LABEL, BUFER 69	MOVE LABEL TO BUFER	12	07331	66860
**MRITE ROUTINE **MRITE ROUTINE MLCA BPRIME, WRITE & BUDR CW BPRIME; CM BPRIME; CM BPRIME; CM BPRIME; CLEAR SW MT 11, BUFER M/L XXN BUFER W, U/8 MT 11, BUFER SBR XAREOT MOVE INST TO ERR MSG MOT3373 G 000537 MCA WRITES9, WHAT-1 MOVE INST TO ERR MSG B TST4OL BEX1 **E8, B MENANCH ON 1/4/8/A/8 BA1 WRITE CONT IN COMMON RT 1 07344 N 12 07345 D 01125 1 07345 M **Ul 094 1 07343 J 07430	ပ	MON			-	07343	z
NOPWM NOW NOW NOW NOW NOWM NOW	•		*WRITE ROUTINE				
MLCA BPRIME, WRITE & B SET NEW WRITE AUDR 12 07345 D 01125 CW BPRIME CLEAR SW 6 07357 B 07345 WT 11,8UFER M/L XXN BUFER W, U/B 10 07363 M ±U1 09 SBR XAREDT B-REG, END UF X-FER 7 07373 G 00059 MLCA WRITEE9, WHAT-1 MOVE INST TO ERR MSG 12 07380 D 07377 B TST40L GU SEE ABOUT OLAP 7 07392 J 07862 BEXI *E8, B BRANCH ON 1/4/8/A/B 7 07399 R 07413 B WRITE TRY AGAIN IF BUSY 7 07406 R 07363 B MERGE CONT IN COMMON RT 7 07413 J 07630	BPRIME	MAGON			4	07344	z
CW BPRIMWEI CLEAR SW 6 07357 B 07345 MT 11.BUFER M/L XXN BUFER W, U/8 10 07363 M ±UI 09 SBR XAREDT B-REG, END UF X-FER 7 07373 G 00059 MLCA MRITEE9,WHAT-1 MOVE INST TO ERR MSG 12 07380 D 07377 B TST40L CD SEE ABOUT OLAP 7 07392 J 07862 BEXI *E8,B BRANCH ON 1/4/8/A/B 7 07399 R 07413 BAI WRITE TRY AGAIN IF BUSY 7 07406 R 07363 B MERGE CONT IN COMMON RT 7 07413 J 07630		MLCA	BPRIME, WRITECO	SET NEW WRITE ADDR	12	07345	01125
WT 11,8UFER M/L XXN BUFER W, U/8 10 07363 M \$U1 09 SBR XAREOT B-REG, END OF X-FER 7 07373 G 00059 MLCA WRITEE9,WHAT-1 MOVE INST TO ERR MSG 12 07380 D 07372 B TST40L GU SEE ABOUT OLAP 7 07392 J 07862 BEXI *E8,b BRANCH ON 1/4/8/A/8 7 07399 R 07413 BAI WRITE 7 07406 R 07363 B MERGE CONT IN COMMON RT 7 07413 J 07630		3	BPRIMWE1	CLEAR SW	•	07357	
SBR XAREOT B-REG, END UF X-FER 7 07373 G 00059 MLCA WRITEE9,WHAT-1 MOVE INST TU ERR MSG 12 07380 D 07372 B TST4OL CU SEE ABOUT OLAP 7 07392 J 07862 BEXI *E8,B BRANCH ON 1/4/B/A/B 7 07399 R 07413 BAI WRITE TRY AGAIN IF BUSY 7 07406 R 07363 B MERGE CONT IN COMMON RT 7 07413 J 07630	WRITE	3	11, BUFER	M/L XXN BUFER W. U/8	10	07363	¥∪1 09400
MRITEE9,WHAT-1 MOVE INST TO ERR MSG 12 07392 J 77862 1 07392 J 07862 J 07862 J 07862 *E8,B BRANCH ON 1/4/8/A/B 7 07399 R 07413 WRITE TRY AGAIN IF BUSY 7 07406 R 07363 MERGE CONT IN COMMON RT 7 07413 J 07630		SBR	XAREDT	B-REG, END OF X-FER	7	07373	0.000
TST4OL CU SEE ABOUT OLAP 7 07392 J 07862 *E8,b RANCH ON 1/4/8/A/8 7 07399 R 07413 WRITE TRY AGAIN IF BUSY 7 07406 R 07363 MERGE CONT IN COMMON RT 7 07413 J 07630		MLCA	ż	MOVE INST TO ERR MSG	12	07380	07372
#£8, BRANCH ON 1/4/8/A/8 7 07399 R 07413 WRITE TRY AGAIN IF BUSY 7 07406 R 07363 MERGE CONT IN COMMON RT 7 07413 J 07630		60	15140L	GO SEE ABOUT OLAP	~	07392	07862
WRITE TRY AGAIN IF BUSY 7 07406 R 07363 MERGE CONT IN COMMON RT 7 07413 J 07630		8EX1	1 8.63.	BRANCH ON 1/4/8/A/8	7	07399	R 07413
MERGE CONT IN COMMON RT 7 07413 J		8 4 1	WRITE	TRY AGAIN IF BUSY	7	07406	07363
		9	MERGE	CONT IN COMMON RT	7	07413	

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			TAPE OPERATIONS TEST			1020 P	PAGE	96
LABEL	00040	OPERAND		5	AODRS	INSTRUCTION		
•		ALTER READ INSTRUC	INSTRUCTION IN UTILITY					
•		READ ROUTINE TO IN	E TO INSTRUCTION REQUESTED					
RT	SBR	RETURN	COMMON EXIT	~	07420	G 00039 B		
	&	READER	TO READ ROUTINE	^	07427	J 07535		
	N O	e in a		4	07437			
RTB	SBR	RETURN		~	07438	G 00039 B		
	80	READER		_	07445	J 07535		
	DCM	DMESID		4	07455			
RTH	SBR	RETURN		~	07456	6 00039 B		
	20	READER		~	07463	J 07535		•
	M DC M	altuia		4	07473			
RTBW	SBR	RETURN		~	07474	6 00039 8		
	50	READER		~	07481	J 07535		
	DCM	alxBla		4	07491			
RTBGW	SBR	RETURN		~	07492	G 00039 B		
	MLCS	COL SEQ-56, READ 69	SET D-MOD TO \$	12 (07499	0 08768 07589	M	
RTGOSH	NOP		OVRLAP ON 7010 UNLY		11510	22		
	ALCS	CHCON-46CHSTCT,RTE	TCT, RTEOP-2 UN-OL READ EOM	12	07512		m)	
RTEOP	M DO	alxBla			07534	66600		
•		•READ ROUTINE						
READER	SBR	SXR3	STORE ADDR OF OP	~	07535	6 00064 8		
	MLCA	3CSXR3,READE3	SET OP REG IN PLACE	12 (07542	0 00,03 07583	-	
	2 0	CLEAR	CLEAR BUFER-SET GMWM AT END	~	07554	J 07825		
BPRIMR	NOPWN			-	07561	z		
	MLCA	BPRIME, READES	REAO AODR	12 0	07562	0 01125 07588	_	
	¥ 0	BPRIMREI	CLEAR SW	9	07574	а 07562		

TAPE OPERATIONS TEST CT ADDRS INSTRUCTIO M/L XXN BUFER R U/B B-REG, END OF X-FER SET INST IN ERR MSGE GO SEE ABOUT OVERLAP BRANCH ON 1/4/8/A/B TRY AGAIN IF BUSY TOTOSO R TOTOSO B TOTOSO 1/760 B TOTOSO R TOTOSO B	OPERAND 11.BUFER M/L XXN BUFER R U/B 10 XAREOT B-REG, END OF X-FER 7 READC9, WHAT-1 SET INST IN ERR MSGE 12 TST40L GO SEE ABOUT OVERLAP 7 *E8,B BRANCH ON 1/4/8/A/B 7 READ TRY AGAIN IF BUSY 7	TO20 PAGE 57 CT ADDRS INSTRUCTION	07580 M XU1 09400 K	07590 G 00059 B	07597 U 07589 U8241 I	07609 J 07862	R 07630 B	R 07580 M
	TAPE OPERATIONS TEST 11.BUFER XAREOT READC9.WHAT-1 SET INST IN ERR MSGE TST40L 60 SEE ABOUT OVERLAP 68.B TRY AGAIN IF BUSY	ADDRS	01580		16510		07616	07623
TAPE OPERATIONS TEST M/L XXN BUFER R U/B B-REG, END OF X-FER SET INST IN ERR MSGE GO SEE ABOUT OVERLAP BRANCH ON 1/4/8/A/B TRY AGAIN IF BUSY	OPERAND 11.BUFER XAREOT TST40L *68.B	5	01	7	12	1	1	-
	0PERAND 11.BUFER XAREOT READE9.WHAT-1 TST40L .68.B	TAPE OPERATIONS TEST	M/L XXN BUFER R U/B	B-REG, END OF X-FER	SET INST IN ERR MSGE	GO SEE ABOUT OVERLAP	BRANCH ON 1/4/8/A/B	TRY AGAIN IF BUSY
OPCOD RF SBR MLCA B BEX1		LABEL	READ					

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	00040	UPERAND		5	ADDRS	INSTRUCTION	
•							
•		WRITE, READ & U.C.	E U.C. ROUTINES MERGE AND				
•		CONTINE TESTING IN COMMON ROUTINE	N COMMON ROUTINE				
ã	BCE	•68,TA05,1	HALT AFTER 1 1/0 OP	12	01630	B 07649 01005 1	
60		• 62	CONTINUE	7	07642		
I			I/O AREA AT 09400 FOR DISPLAY	-	07649	•	
ž	MODE			-	07650	Z	
6 0		RESTOR	BYPASS ALL ERROR CKS	7	07651	J 07762	
35	3 8	RWDSW0£1	DONT GO TO FAST RWD	9	07658	n 08314	
8	BA1	TSTIND	TEST ALL STATUS IND	7	07664	R 07931 M	
8	8CE	RESTOR, TAD4,1	NO OVERLAP	12	07671	07762	
		TESTING OVERLAP OF	OPERATION - PHASE 2				
		PHASE 1 DONE IN TS	TST4DL ROUTINE				
9	BCE	TSTD4M,WHAT-10,U	WAS OP A U.C.	12	07683	B 07707 08232 U	
9(BCE	CK401P. WHAI-9.	NO+ MUST BE M/L DP	12	07695	07744 08233	
8	BCE	CK40IP+WHAT-6+M	MAS II G XXN M	12	10770	B 07744 08236 M	
33	~	RESTOR, OIPSW-1	SHOULDNY & DIDNY BOL	12	07719	V 07762 01193 1	
MS 66	_	ERR 99	SHOULDNT BOL & DID	9	07731	00300	
80		RESTOR	OK, CONTINUE	7	07737	J 07762	
9.	~	RESTOR, OIPSW	SHOULD BOL AND DID	12	44:10	V 07762 01194 1	ı
MS 86	7 >	ERR98	SHOULD BOL AND DIDNT	•	07756	• 00299	
		END OF OVERLAP TESTING	TING				
Š		BYPASSE1	RESTORE BYPASS SW	•	07762	в 07651	
S		DCCNT	ZERO O C ERROR COUNTER	•	07768	\$ 01148	
S			ZERO WLR ERROR COUNTER	-	97170	S	
¥	MLCA	STDWRT, WRITE&9	RESET STO WRITE OP	12	07115	0 07818 07372 1	
¥	MLCA	STDRDT, READE9	RESET STU READ UP	12	07787	0 07824 07589 1	
BNO		CONTRL	TO CONTROL ROUTINE	4	96110		
∞		OERETURN	RETURN TO MAIN LINE	1	07806	0000	

M O C M		@M00760@	B ADOR & D MOD FOR STD WRITE	9	07818		
DCM		909400Ra	B AODR & D MOD FOR STO KEAD	9	07824		

			יאור טונאטון פואין				
LABEL	00000	OPCOD OPERAND		5	ADDRS	INSTRUCTION	_
•		*UTILITY SUB-ROUTINES	nnes				
•		CLEAR OUT INPUT-	OUT INPUT-OUTPUT AREA				
•		SET GM-WM AT END OF DATA FIELD	OF DATA FIELD				
CLEAR	SBR	CLRXIT65	STORE ADDR NEG FOR RETURN	7	07825	G 0786U B	
	cs	BUFRNDE1	CLEAR FROM BUFER END	•	07832	98660 /	
	cs			-	07838	1.555	
	cs		TO FIRST POSITION	1	07839		
	SS			-	07840	5 4 2 1	
	cs		GET IT ALL	1	07841	T	
	cs			-	07842	***	
	MLCWS	GMWM, BUFERERECLEN	IN SET GMMM AT END OF BUFER	12	07843	0 01009 090	1 04060
CLRXIT	60	00000		7	07855	00000 f	
•							
•		TEST OVERLAP IN PROCESS	PROCESS - PHASE 1				
* TST40L	SBR	017X1765	SAVE FOR RETURN	1	07862	6 07929 8	
	BCE	OLTXIT, TAD4,1	DO NOT TEST OVERLAP	12	69810	8.07924 01004	1 400
	č	OIPSW	RESET OLAP TEST SW	•	0 7881	p 01194	
	S		OIPSW OFF, OIPSW-1, ON	~	07687	si.	
	BOL1	010	BRANCH ON OVERLAP	1	07888	J 07902 I	
	89	OLIXIT	DID NOT BOL	7	07895	J 07924	
010	S	OIPSW	SET SW TO IND OLAP	9	01902	, 01194	
	3		OIPSW ON, OIPSW-1 UFF	-	01908	п	
	BOL 1	9	HANG ARDUND ON UIP	Ö	60610	J 07909 L	
	MMGON		DONT STORE E 11L SET	-	91620	z	
AREOTO	SER	XAREOT	ADDR AT END OF X-FER	1	11610	G 00059 E	
OLTXIT	œ	00000	2011	,	20000	00000	

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			TAPE OPERATIONS TEST			1020	PAGE	9
LABEL	00240	OPERAND		5	ADDRS	INSTRUCTION	7	
• •		TEST ALL STATUS I	STATUS INDICATORS					
TSTIND	MLCA	ALLIND, INDSET	SET ALL IND IN MESGE	12	07931	0 01146 083	08248 T	
	BNR1	£13*	NOT READY	7	07943	R 07962 1		
	MLCS	ABLANK, INDSET-5	REMOVE STATUS	12	07950	D 08249 083	08243 3	
	8CB1	•613	AUSY	7	07962	R 07981 2		
	MLCS	ABLANK, INDSET-4	INDICATURS FRUM	12	69610	U 08247 083	08244 3	
	BER1	*£13	DATA CHECK	7	07981	R 08000 4		
	MLCS	ABLANK, INDSET-3	MESSAGE IF THEY	12	07988	0 08249 083	08245 3	
	BEF1	*£13	CONDITION	7	08000	R 08019 8		
	MLCS	ABLANK, INDSET-2	WERE NOT SET .	12	08001	D 08249 082	5 9 9 3	
	8WL1	• 613	WLR	7	61080	R 08038 -		
	MLCS	ABLANK, INDSET-1	ONLY INDICATORS	12	08026	0 08249 082	247 3	
	BNT1	• £13	NO XFER	_	08038	R 08057 B		
	MLCS	ABLANK, INDSET	SET ARE LEFT	12	08045	D 08249 083	08248 3	
	BCE	CK4HLT.TAD8.1	NO STATUS IND TYPEQUT	12	08057	B 08281 010	01008	
	60	ERRCTL	TO ERROR CONTROL RT	~	69080	J 08188		
•								
• •		◆CHECK FOR ERROR M	MESSAGES					
CK4WMS	S	ERK9981	SET START OF ERR SCN	9	92080	, 00301		
	SAR	SXR3	IN INDEX REGISTER	~	08082	♥ 59000 5		
	3	LASTWM61	END OF TABLE SWITCH	9	68080	п 08115		
SCN4ER	SCNLB	09999,06SXR3	SCAN ERROR TABLE	12	96080	00 66860 0	- 00.00	
	SBR	SXR3	BAR IS B FIELD WM-1	~	08107	6 00064 8		
LASTHM	NUPWM				08114	z		
	BCE	NOMOWM. 16SXR3. M	END OF ERROR TABLE	12	08115	8 08268 00:01	10.	
	9CE	CK4LUP, 1ESXR3, H	END OF ERROR TABLE	12	08127	8 01869 00,01		
	NS.	LASTWME1	CLEAR SHITCH	9	08139	08115		
	™	1 ESXR3	CLEAR WMS	9	06145	a 00.01		
	MLCB	ABLANK, INDSET	BLANK OUT FIELD	12	08151	0 08249 083	08248 L	
	MLCB		ALL OF IT		08163	ด		
	MLN8	SXR3, INDSET-4	SET ERROR NUMBER	12	08164	D 00064 08244	544 J	
	MLCA	LERROR, WHAT-6	SET ERROR IN ERROR MESSAGE	12	08176	D 01140 08	08236 T	

			TABL DECEMBER 1000		1020	9.00	3
LABEL	00000	OPERAND		CT ADDRS			;
•		• ERROR CONTROL ROUTINE	INE				
•							
ERRCTL	BCE	CK4HLT.TADO.1	NO TYPING OF ANY MSG	12 08188	8 8 08281	1 00010 1	
	MLN8	SXR2,WHERE	LOC OF START OF RT	12 08200	0 0 00034	4 08254 J	
	s	SEVEN, WHERE	REDUCE ADDR BY 7	11 08212	2 \$ 08731	1 08254	
	80	TYPEIT	COMMON TYPING ROUT	7 08223	3 J 09344		
	DCW	(e) 	READ, WRITE OR UC OP	7 08236	9		
WHAT		ca Ca	WHEN ERROR WAS MADE	6 08242	7		
INDSET		re .	INDICATORS SET	6 08248	80		
ABLANK		(T)		1 08249	5		
WHERE		9 0000000	ADDR OF START OF RT	5 08254	4		
	M8	SCN4ER, LASTWM61	LUDK FOR MORE ERRORS	12 00256	\$6080 A 9	5 08115 1	
NOMON	Œ.	LASTWM61	END OF TABLE SWITCH	6 08268	8 🖪 08115	•	
	0 0 8	CONTRL	CHECK FOR INQUIAY	7 08274	4 J 01010	•	
CK4HLT	BCE	HALT, TAD2, 1	HALF ON ERROR	12 06281	1 B 08300	0 01007 1	
	8	HALTE1	CONTINUE	7 08293	3 J 08301	_	
HALT	I		HALT ON ERROR	1 08300	•		
	BCE	AWMSET, WHAT-10,E	NOT A STATUS IND ERR	12 08301	1 8 08376	5 08232 E	
RWDSWO	NOPHM			1 08313	Z E		
	80	NEXTO	RETURN TO FAST RWD	7 08314	59990 f +	10	
	BCE	EOFRI, INDSET-2,8	TO END OF FILE ROUT	12 08321	1 B 08449	08246 8	
	BCE	NRDYRT, INDSET-5,1	TO NOT READY ROUTINE	12 08333	3 8 08425	5 08243 1	
	BCE	DCERRT, INDSET-3,4	DATA CHECK ERR KOUT	12 08345	5 8 08463	3 08245 4	
	BCE	WLROUT, INDSET-1,8	WLR ROUTINE, NO DC	12 08357	7 B 08493	3 03247 B	
	60	RESTOR	NO X-FER SET, GO ON	7 08369	9 J 07162	0.	
AWMSET	BCE	CTERNO, INDSET-5,0	CHK FOR ERRS 01 - 09	12 08376	6 8 08395	5 08243 0	
	80	CK4LUP	RETURN TO MONITOR	7 08388	8 J 01869	•	
CTERNO	A	ONE, WMERCT	COUNT ERROR NUMBER	11 08395	5 A 08681	1 01147	
	BCE	NRDYRT, WMERCT, 3	DROP TO ON 3 ERRS	12 08406	Ø	01147 3	
	8	0£5XR2	REPEAT ROUTINE	7 08418	8 J 000.0	2	

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LABEL	OPCOD	OPERAND	TAPE OPERATIONS TEST	CT AG	ADDRS	TO20 INSTRUCTION	PAGE	9
		•ERROR ROUTINES						
•		NOT READY ROUTINE						
•								
NRDYRT	80	TYPEIT		7 08	08425	J 09344		
	DCW	a ◆ DROPPEDa + G	DRIVE DROPPED	90 6	08440			
	60	NEXTOR	GO GET NEXT DRIVE	1 OB	08442	96910 f		
•								
• •		END OF FILE ROUTINE	NE – WHILE WRITING					
• U	α	23	C 2 - 3 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4	60	07780	1 06875		
	o &	065xR2	REPEAT RUUTINE		08456			
•								
•		DATA CHECK ERROR	ROUTINE					
•								
DCERRT	∢	ONE DCCNT	ADD TO COUNT	11 08	08463	A 08681 0	01148	=
	BCE	RESTOR, DCCNT, 3	BYPASS REC AFIER 3	12 08	92580	8 07762 0	01148 3	
	භ	WHERE2	TRY AGAIN	40 V	08486	91580 f		
•								
•		WRONG LENGTH RECORD ROUTINE	RD ROUTINE					
•								
WLROUT	∢	ONE, WLRCNT	ADD TO COUNT	11 08	08493	A 08681 0	01149	
	BCE	RESTOR, WLRCNT, 3	BYPASS REC AFTER 3	12 08	08504	B 07762 0	01149 3	
0 u u I I	d v		N N N N N N N N N N N N N N N N N N N	\$0 0	08516	# I C # S		
	BFX1	a 60 61	B8ANCH ON 1/4/8/A/8		08521	08535		
	BA1	•-18	TRY AGAIN IF BUSY	7 08	08528			
	SKP	10	ERASE BEFORE REWRITE	5 08	08535	U *U0 E		
	8EX1	8.83.	BRANCH ON 1/4/8/A/8	7 08	08240	R 08554 B		
	BA1	*-18	TRY AGAIN IF BUSY	7 08	08547	R 08535 F		
	BCE	WRITE, WHAT-1, W	IT WAS A WRITE UP	12 08	08554	B 07363 0	08241 W	
	BCE	READ, WHAT-1,R	IT WAS A READ OP	12 08	99580	8 07580 0	08241 R	
	80	UCONOP	MUST HAVE BEEN A UC	7 08	08578	02690 f		
UPREND	I			1 08	08585	, •		

		TAPE OPERATIONS TEST			T020 P	PAGE	9
LAREL	00240	OPCOD OPERAND	5	ADDRS	INSTRUCTION		
•		TALLEY TABLE FOR BITS DROPPED					
	၁	91.9	~	08587			
DROPOI	DCW	е е	4	16580			
		92-9	7	08593			
DROPD2		(°	4	08597			
		6-46	7	08599			
DROP04			4	08603			
		98-9	7	98605			
OROPO8			4	60980			
		9A-2	7	11990			
DROPDA		•	4	08615			
		98-9	7	08617			
OROPOB		•	4	12980			
		aca	7	08623			
DROPOC		· G	4	08627			
•		TALLEY TABLE FOR BITS PICKED UP					
	DCW	e 1e	7	08629			
PICKOI		6	4	08633			
		e 2 e	7	08635			
PICKD2		· Co	4	08639			
			7	08641			
PICKD4		(0)	4	08645			
		28.9	7	08647			
PICKD8		•	4	08651			
		6 A 6	7	08653			
PICKDA			4	14980			
		e ରଚ	7	65980			
PICKOB			4	08663			
		୧ ୦୧	7	99990			
PICKOC		(9)	4	69980			
ERRCNT		(B)		08670			

*TEST DATA

OPCOO OPERAND

LABEL

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PAGE 64

			TAPE OPERATIONS TEST			TO20 PAGE	Se
LABEL	00240	OPERAND		CT AD	ADDRS	INSTRUCTION	
	20	(B)	A C 81T	1 09	09337		
	DCM	@ - @	A B BIT	1 09	09338		
	M CM	9 % 6 %	AN A BIT	1 09	09339		
	DCH	686	AN 8 BIT	1 09	07860		
	DCW	9.4.D	A 4 81T	1 09	09341		
	M DO	958	A 2 BIT	1 09	09342		
AIBIT	DCM	919		1 09	09343		
•		TYPING ROUTINE					
TYPEIT	SBR	TYPE68	STORE ADDRESS OF MESSAGE	7 09	09344	G 09359 B	
TYPE	MCP	00000	TYPE MESSAGE	10 09	15660	M \$10 00000 W	
	SBR	TYPEXT65	STORE ADDRESS FOR RETURN	7 09	19860	6 09387 8	
	8CB1	TYPE		7 09	89860	K 09351 Z	
	BA1	• 6.1	RESET INTERLOCK	7 09	09375	R 09382 M	
TYPEXT	4	00000	RETURN TO MAIN PROGRAM	7 09	09382	00000 F	
	I		DEFINE PRECEDING BRANCH LENGTH	1 09	68860	•	
	DRG	9390		60	06260		
RECNO	DCW	@0000e	RECDRO NUMBER	4 09	66860		
LENGTH C	20	@00000@	RECORD LENGTH	5 09	96860		
LABEL	20	B # B	LABEL FOR LONG RECS	1 09	66860		

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1020	INSTRUCTION
	ADDRS
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_	
TEST	
TAPE OPERATIONS	
TAPE	

OPCOD OPERAND

LABEL

T020 PAGE 66

INITIALIZATION- ONE TIME ONLY THIS AREA IS ALSO THE BUFER AF IT WILL BE CLEARED OUT WHEN SI 94.00 33.2 CLEAR OUT 95.20 SET WAS IN 17.95.90 MOVE WHS IN 18.95.90 MOVE RESET AND WHS 18.95.90 MOVE RESET AND WHS 18.95.90 MOVE WHS 18.95.90 MOVE WHS 18.95.90 MOVE RESET AND WHS 18.95.90 MOVE WHS 18.90 MO	ā <u></u>	IAL IZ AREA ILL B	REA			
THIS AREA IS ALSO THE IT WILL BE CLEARED G 9400 332 95,20 95,90 RESETI-6,1 RESETI-6,1 ROSYSI,SYSI,- WTEOSWGI,RTGOSWGI GOZIOKGI GOZIOKGI GOZIOKGI SYSIGI,WIEADR-4 CLI3,SYSIGI,1 CONE,TAD4 ONE,CHANOS FWO,CHANOSCI	Ē	AREA	AREA			
IT WILL BE CLEARED C 9400 332 95.20 95.90 RESETI-6.1 PESTI-6.1 TYPEIT TYPEIT ATOZOCA.6 CHECK SYSTEMS CARD I TYPEIT ATOZOCA.6 CHECK SYSTEMS CARD I TYPEIT TYPEIT ATOZOCA.6 CHECK SYSTEMS CARD I SYSIGI.BOMANI SYSIGI.BOMANI SYSIGI.WIEADR-4 CONE, TAD4 ONE, CHANDS *C12, SYSIGI3, TWO, CHANDSEI		ווו	OF CHAPT			
9400 95,20 95,90 RESETI-6,1 TYPEIT PTOZOCA,6 CHECK SYSTEMS CARD II HOWBIG, SYSI,- WTEOSWEI, RTGOSWEI GOZIOKEI GOZIOKEI GOZIOKEI FORMANI SYSIEI, WIEADR-4 CLI3, SYSIEI, I CONE, TAD4 ONE, CHANOS *CI2, SYSIEI, E *CI3, SYSIEI, I *C	1-4	•	SETUP 15			
95,20 95,90 RESETI-6,1 FESETI-6,1 TYPEIT 2TO20C2,6 CHECK SYSTEMS CARD IN TO SYSTEMS CARD IN TO SYSTEMS CARD IN TO SWELL BY TO SYSTEMS CARD IN TO SYSTEMS TO SYS		004			00460	
95,20 95,90 RESETI-6,1 FESETI-6,1 FYPEIT aTO20Ca,6 CHECK SYSTEMS CARD I NOSYS1,8781,- WTEOSWG1,RTGOSWG1 GOZ10KG1 GOZ10KG1 GOZ10KG1 SYSIG1,EOMAN1-4, T EOMAN1 SYSIG1,WIEADR-4 -613,SYSIG1,1 SYSIG1,WIEADR-4 -613,SYSIG1,1 SYSIG1,WIEADR-4 -613,SYSIG1,1 SYSIG1,WIEADR-7 -613,SYSIG1,1 -613,SYSIG1,1		32		•	00760	/ 00332
95,20 95,90 RESET1-6,1 FORMM, ERRO1-2 TYPEIT TYPE	SS			-	90460	•
95,20 95,90 RESETI-6,1 FESETI-6,1 TYPEIT PTOZOC.2,6 CHECK SYSTEMS CARD INTEOSUCI, RTGOS WCI GOZIOKCI GOZIOKCI GOZIOKCI GOZIOKCI SYSICI, EOMANI-4, T EOMANI SYSICI, WIEADR-4 0 NE, FAD4 0 NE, CHANOS • C13, SYSICI, 1	S			-	09407	,
95,20 95,90 RESETI-6,1 FESETI-6,1 FYPEIT a1020Ca,G CHECK SYSTEMS CARD INDSYS1,SYS1,- WTEOSWE1,RTGOSWE1 GOZIOKE1 GOZIOKE1 GOZIOKE1 SYSIE1,EOMAN1-4 FEOMAN1 SYSIE1,WIEADR-4 -613,SYSIE1,1 GONE,CHANOS -613,SYSIE13, TWO,CHANOSE1	cs			-	09408	_
S GMWM, ERROI-2 TYPEIT PTO20C2,G CHECK SYSTEMS CARD NOSYSI, SYSI,- WTEOSWEI, RTGOSWEI GOZIOKEI GOZIOKEI SYSIEI, EOMANI-4 CONE, EOMANI SYSIEI, WIEADR-4 CI3, SYSIEI, GONE, TAD4 ONE, CHANOS FWO, CHANOSEI FOR AND CHANOSEI FOR AND CHANOSEI FOR AND CHANOSEI		5,20	SET WMS IN XRS	11	60760	00005 00050
S GMWW, ERRO1-2 TYPEIT aTO20Ca,G CHECK SYSTEMS CARD I MDSYS1,SYS1,- WTEDSWE1,RTGOSWE1 GD210KE1 GD210KE1 GD210KE1 SYS1E1,EDMAN1-4 ONE,EDMAN1 *£7,EOMAN1-4,T EOMAN1 \$YS1E1,WIEADR-4 *£13,SYS1E7,1 ONE,TAD4 ONE,TAD4 ONE,CHANDS *£13,SYS1E13, TWD,CHANDSE1		2,90		12	03450	N 06000 56000 0
GMWM, ERRO1-2 TYPEIT aTO20Ca,G CHECK SYSTEMS CARD I CHECK SYSTEMS CARD I MUEDSWEI, RTGOSWEI GD210KEI GD210KEI GD210KEI GD210KEI FTEDWANI SYSIEI, EDMANI-4 EOMANI SYSIEI, WIEADR-4 EL13, SYSIEI, I ONE, TAD4 ONE, CHANOS EL13, SYSIEI, I TWO, CHANOSEI		ESET1-6.1		12	09432	0 09694 00001 M
S GWWW, ERROI-2 TYPEIT #TOZOCA-6 CHECK SYSTEMS CARD IN TOWBIG, SYSIE, MTEOSWEI, RTGOSWEI GOZIOKEI GOZIOKEI GOZIOKEI GYSIE, EOMANI SYSIEI, EOMANI *C7, EOMANI SYSIEI, WIEADR-4 EOMANI SYSIEI, WIEADR-4 CI3, SYSIEI, I FONE, TAD4 ONE, CHANOS *C12, SYSIEIS, TWO, CHANOSEI				~	44460	0
S GMWM, ERRO1-2 TYPEIT aTO20Ca,G CHECK SYSTEMS CARD II NOSYS1,SYS1,- WTEOSWE1,RTGOSWE1 GO210KE1 GO210KE1 GYS1E1,EOMAN1-4 ONE,EOMAN1 *£7,EOMAN1-4,T EOMAN1 \$YS1E1,WIEADR-4 *£13,SYS1E1,1 ONE,TAD4 ONE,TAD4 ONE,CHANDS *£12,SYS1E13, TWO,CHANDSE1	A C M		AND WHS	-	94460	0
S GMWW, ERROI-Z TYPEIT aTO20Ca,G CHECK SYSTEMS CARD IN NOSYSI, SYSI, HDWBIG, SYSI, WTEOSWEI, RTGOSWEI GOZIOKEI GOZIOKEI GOZIOKEI FOTENK, ODEVNI SYSIEI, EDMANI-4 EOMANI SYSIEI, WIEADR-4 EOMANI SYSIEI, WIEADR-4 ONE, TAD4 ONE, CHANOS ELIZ, SYSIEI3, TWO, CHANOSEI	4RCW			-	94460	0
TYPEIT aTO20Ca,6 CHECK SYSTEMS CARD I NOSYSI,SYSI,- WTEOSWEI GOZIOKEI GOZIOKEI GOZIOKEI SYSIEI,EOMANI-4 ONE,EOMANI SYSIEI,WIEADR-4 EOMANI SYSIEI,WIEADR-4 EOMANI SYSIEI,WIEADR-4 EOMANI SYSIEI,WIEADR-4 EOMANI SYSIEI,WIEADR-7 EOMANI SYSIEI,WIEADR-7 EOMANI SYSIEI,WIEADR-7 EOMANI SYSIEI,WIEADR-7 EOMANI SYSIEI,WIEADR-7 EONE,CHANOSEI ELIZ,SYSIEI3, TWO,CHANOSEI	S	MWM. ERRO1-2	FOR END OF	12	15560	0 01009 00200 1
CHECK SYSTEMS CARD INDSYSI, HDWBIG, SYSI, MTEDSWEI, RTGOSWEI GOZIOKEI GOZIOKEI GOZIOKEI SYSIEI, EOMANI SYSIEI, EOMANI SYSIEI, WIEADR-4 EOMANI SYSIEI, WIEADR-4 EOMANI SYSIEI, WIEADR-4 ELI3, SYSIEI, I		YPEIT		7	6456	J 09344
CHECK SYSTEMS CARD I NOSYSI, SYSI, HOWBIG, SYSI,- WTEDSWEI, RTGDSWEI GOZIOKEI GOZIOKEI SYSIEI, EOMANI-4 ONE, EOMANI SYSIEI, WIEADR-4 CAI3, SYSIEI', I SYSIEI, WIEADR-4 CAI3, SYSIEI', I SONE, CHANOS CAI2, SYSIEI', TWO, CHANOSEI		TO200 B		S	0440	
NOSYSI, SYSI, HOWBIG, SYSI,- WTEOSWEI, RTGOSWEI GO210KEI SYSIGI, EOMANI-4 ONE, EOMANI-4, T EOMANI SYSIGI, WIEADR-4 CI3, SYSIE7, I ONE, TAD4 ONE, CHANOS FIZ, SYSIE13, TWO, CHANOSEI	٠	LECK OVOTERS CAR	EOR INFO NEEDED			
HOWBIG, SYSI, HOWBIG, SYSI, WTEOSWEI, RTGOSWEI GOZIOKEI GOZIOKEI SYSIEI, EOMANI—4 SYSIEI, EOMANI—4 ONE, EOMANI SYSIEI, WIEADR—4 ELI3, SYSIEI, I ONE, CHANOS ELI2, SYSIEIS, TWO, CHANOSEI						
HOWBIG, SYSI,- WTEOSWEI, RTGOSWEI GOZIOKEI SOZIOKEI SYSIEI, EDMANI-4 ONE, EDMANI *£7, EDMANI-4, T EOMANI SYSIEI, WIEADR-4 *£13, SYSIE7, I ONE, TAD4 ONE, CHANOS *£12, SYSIEI3, TWO, CHANOSEI		05751,5751,	NO SYSTEM CARD	12	09412	8 09704 01256
MTEOSWEI, RTGOSWEI GOZIOKEI SOZIOKEI SYSIEI, EOMANI—4 ONE, EOMANI *£7, EOMANI \$YSIEI, WIEADR—4 CONE, TAD4 ONE, CHANOS TWO, CHANOSEI		DWBIG, SYS1,-	TEST FOR 7010	12	09484	W 09525 01256 -
GOZIOKEI SYSICI, EDMANI-4 ONE, EOMANI E + £7, EOMANI-4, T EOMANI SYSICI, WIEADR-4 E + £13, SYSICI, I ONE, CHANOS TWO, CHANOSEI F + £12, SYSICIS		TEOSWE1,RTGOSWE1	OVRLAP WI-RI EOM OK	4 gα-6	96460	071119 07512
SYSICI, EOMANI-4 ONE, EOMANI *£7, EOMANI SYSICI, WIEADR-4 *£13, SYSICI, MIEADR-4 *£13, SYSICI, 1 ONE, TAD4 ONE, CHANOS *£12, SYSICI3, TWO, CHANOSEI		0210K61	ROUTINE ABOVE 10K IF 7010	9	10560	, 04249
SYSICI, EDMANI-4 ONE, EDMANI -6.7, EDMANI-4, T EOMANI SYSICI, WIEADR-4 -6.13, SYSICI, 1 ONE, TAD4 ONE, CHANOS -6.12, SYSICI3, TWO, CHANOSEI	9 3	OTENK, ODEVNI	MOVE ROUTINE ABOVE 10K	12	09513	0 09735 10000 E
ONE, EDMAN1 • £7, EDMAN1 • £13, EDMAN1 • £13, SYS1£1, MIEADR-4 • £13, SYS1£7, 1 ONE, TAD4 ONE, CHANOS • £12, SYS1£13, TWO, CHANOS£1			SET UP END OF MEMORY	11	09525	A 01257 01126
• £7, EDMAN1-4, T EDMAN1 \$ Y \$ 1 £ 1, W I E A DR-4 • £ 13, \$ Y \$ 1 £ 7, 1 ONE, T A D4 ONE, CHANOS • £ 12, \$ Y \$ 1 £ 13, T W O, CHANOS £ 1			MAKE CONST EQU EDME1	1	09536	A 08681 01130
EDMAN1 SYSIG1, WIEADR-4 *613, SYSIG1,1 ONE, TAD4 ONE, CHANOS *612, SYSIG13, TWO, CHANOS61		G. 67, EOMAN1-4, T	BR IF NOT A 10K SYSTEM	12	14560	W 09565 01126 T
SYSIGI, WIEADR-4 • 613, SYSIGI, 1 ONE, TAD4 ONE, CHANOS • 612, SYSIGI3, TWO, CHANOSGI		OMANI	SET TO 00000- WHAP-AROUND ADDRESS	9	65560	\$ 01130
• £13, \$Y\$1£7,1 OVERLA ONE, TAD4 - N/A ONE, CHANOS CHAN 1 • £12, \$Y\$1£13, TWO, CHANOS£1 CHANNE		WIEADR-4	SET X-REG EQU EUM-10	11	59560	A 01257 01131
ONE, TAD4 ONE, CHANOS CHAN 1 *£12, SYS1£13, TWO, CHANOS£1 CHANNE		.613, SYS161,1	OVERLAP AVAILABLE	12	09576	в 09600 01263 1
# £12,5YS1£13, TWO,CHANOS£1 CHANNEL		INE, TAD4		12	09588	0 08681 01004 1
+612, SYSIG13, TWO, CHANOSEI CHANNEL		INE CHANOS		11	00960	A 08681 00020
TWO, CHANDS & CHANNEL 2		£12,5YS1£13,		12	11960	8 09634 01269
E LENNYHOL ALIEUNANIELE		WO, CHANOSE1	2	11	09623	A 08691 00021
C 371111110 0175101010101010101010101010101010101010	BCE .	*E13, SYS1E14,	CHANNEL 3 N/A	12	09634	8 09658 01270

LABEL	00000	OPCOO OPERANO	TAPE OPERATIONS TEST	CT ADDRS	TOZO PAGE RS INSTRUCTION	v
	MLNS BCE	THREE, CHANDS & 2 * 612, 5 Y S 1 & 1 S *	CHANNEL 3 AVAILABLE CHANNEL 4 N/A		0 6 4	
	▼ 3 m	FOUR, CHANDSE3 STARTE1 START	CHANNEL 4 AVAILABLE DONT COME HERE AGAIN ALL DONE, RETURN	11 09670 6 09681 7 09687	81 a 02001 87 J 02000	
RESET1	300	(8) (2) (3) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	RESET RESTART ADDR	7 09700 1 09701 1 09702 1 09703	00 01 02 03	
NOSYSI	8 0 I I 0	TYPEIT and SYS CROA.G SETUP a a	NO SYSTEM CARD-SEE SUMMARY PAGE 3 TRY AGAIN	7 09704 10 09720 6 09722 1 09728 6 09734	09704 J 09344 09720 09722 • 09400 09728 •	
ODEVN1 ODEVN2	EQU	10000 DDEVN1£105	ROUTINE ABOVE 10K FOR 7010			

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OPERA	
TAPE	

LABEL • • TOTENK	00240	OPERAND		5	ADORS	INSTRUCTION
101 ENK						
TOTENK		*TEST FOR DATA TRANS	TA TRANSFER FROM			
+ + + + + + + + + + + + + + + + + + +		ODD STARTING ADDR 1	TO EVEN STOP AND			
TOTENK		ODD STARTING ADDR 1	TO ODD STOP ADDR			
	8	MONITR		~	09735	J 01841
	MLNA	a09401a,88888	SET XR TO MOD 8 ADDR	12	09742	/ %5000 66660 0
	SW	BPRIMME1		•	95260	• 07345
	€	H H	WRITE FROM MOD AUDR	7	09160	J 07027
	DCW	016118	DATA FIELD 1 TO 9	2	17760	08750
	v	XAREOT, C09411	COMP ADDR REG TO 09411	11	21160	C 00059 01115
	96	00EVN1661		7	09783	S 19001 f
ERROR 85	NS	ERK85		•	06160	• 00286
	8	ВЅР		1	96160	76890 f
	MS	8 PRIMRE1		9	09803	, 07562
	a	RT	READ INTO MOD ADOR	~	60860	J 07420
	U	XAREOT, CO9411	COMP ADDR REG TO 09411	1.1	91860	C 00059 01115
	8 E	ODEVN16105		1	09827	J 10105 S
ERROR 86	SE	ERK86		•	09834	• 00287
	•			,	9	
	2 0	MUNITR		-	04840	1 5 810 6
	cs	WKAREA	CLEAR OUT WORK AREA	•	09647	/ 00163
	MLCA	DIGITS-1.WKAREA-55	SET UP 8 CHAR FIELD	12	09853	D 08749 00108 T
	MLCWS	GMWM. WKAREA-54	WITH GM WM IN LOC 9	12	9860	0 01009 00109 J
	MLNA	9094019,68888	SET XR TO MOD 8 ADDR	12	09877	/ %5000 66660 Q
	SH	BPRIMME1		9	08880	, 07345
	6 0		WRITE FROM MOD ADDR	7	09895	J 07027
	DCW	-WKAREA	DATA FIELD 8 CHARS	s.	90660	00163
	U	XAREDI, CO9410	COMP ADDR REG TO 09410	11	20660	C 00059 01110
	BE	00EVN2691		7	81660	J 10196 S
ERROR 87	MS	ERK87		9	09925	• 00288
	6 0	ВЅР		7	16660	76890 f
	MLNA	C00009, RECLEN	SET REC LEN FOR 9 CHARS	12	09938	0 01090 00049 /
	NS	BPRIMRE1		9	03660	, 07562
	80	RT	READ INTO MOD ADDR	7	95660	J 07420
	v	XAREUT, CO9410	COMP ADDR REG TO 09410	11	69660	C 00054 01110
	96	ODEVN2£147		7	71660	J 10252 S

LABEL		OPCOD	OPCOD OPERAND	TAPE OPERATIONS TEST	5	ADDRS	TO20 CT ADDRS INSTRUCTION	PAGE	\$
ERROR	6 0	S	ЕККВВ		•	18660	09981 • 00289		
		80	NEXTRI	RETURN TO REST OF TEST	~	18660	09987 J 04256		
		DCW	3.€ 9.€		-	46660			
•				• • • •					
		LTORG				96660			
			a09401a		ĸ,	66660			
		ENO	START						

ROYTOS-1 CKDRIVE3

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ATDNO UNITNO